ORDER NO. SD81061956C8

Service Manual

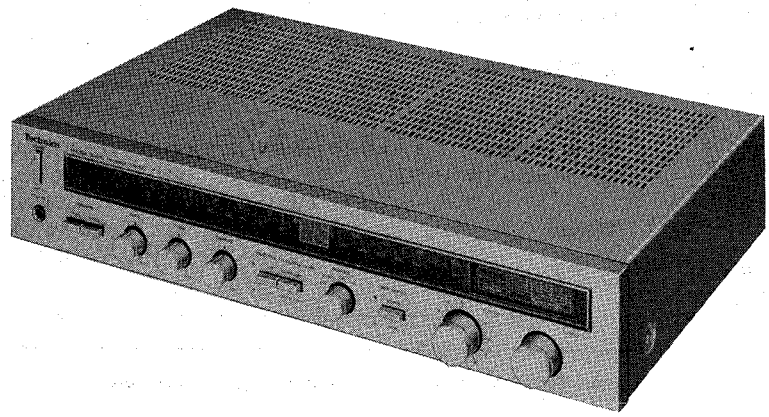
FM/AM Stereo Receiver

SA-103

[EX],[EH],[XA],[XL]

SA-103 (K)

[EX],[EH]



***The cabinet and front panel are available in black color and silver types.**
*** The black type model is provided with (K) in the Service Manual.**

English

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

Specifications (DIN 45 500)

(Specifications are subject to change without notice for further improvement.)

■ AMPLIFIER SECTION

20 Hz~20 kHz continuous power output	
both channels driven	2 × 20W (4Ω)
	2 × 20W (8Ω)
40 Hz~16 kHz continuous power output	
both channels driven	2 × 20W (4Ω)
	2 × 20W (8Ω)
1 kHz continuous power output	
both channels driven	2 × 24W (4Ω)
	2 × 22W (8Ω)
Total harmonic distortion	
rated power at 20 Hz~20 kHz	0.08% (4Ω)
	0.04% (8Ω)
rated power at 40 Hz~16 kHz	0.08% (4Ω)
	0.04% (8Ω)
rated power at 1 kHz	0.04% (4Ω)
	0.04% (8Ω)
half power at 20 Hz~20 kHz	0.025% (8Ω)
half power at 1 kHz	0.009% (8Ω)
−26 dB power at 1 kHz	0.1% (4Ω)
50 mW power at 1 kHz	0.12% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz=4:1, 4Ω	0.08%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.04%
Power bandwidth	
both channels driven, −3 dB	10 Hz~30 kHz (4Ω)
Damping factor	15 (4Ω), 30 (8Ω)
S/N	
rated power (4Ω)	
PHONO	70 dB (IHF, A: 80 dB)
AUX, TAPE	88 dB (IHF, A: 95 dB)
−26 dB power (4Ω)	
PHONO	64 dB
AUX, TAPE	66 dB
50 mW power (4Ω)	
PHONO	62 dB
AUX, TAPE	62 dB
PHONO maximum input voltage (1 kHz, RMS)	130 mV
Input sensitivity and impedance	
PHONO	2.5 mV/47kΩ
AUX	150 mV/22kΩ
TAPE REC/PLAY	180 mV/22kΩ
Frequency response	
PHONO	RIAA standard curve ±0.8 dB (30 Hz~15 kHz)
AUX, TAPE	5 Hz~70 kHz (−3 dB) ±0.2 dB (20 Hz~20 kHz)
Tone controls	
BASS	50 Hz, +10 dB~ −10 dB
TREBLE	20 kHz, +10 dB~ −10 dB
Loudness control (volume at −30 dB)	50 Hz, +9 dB
Output voltage and impedance	
TAPE, REC OUT	150 mV
TAPE REC/PLAY	30 mV/82kΩ
Channel balance, AUX 250 Hz~6,300 Hz	±1 dB
Channel separation, AUX 1 kHz	55 dB
Headphones output level and impedance	210 mV/330Ω
Load impedance	
MAIN or REMOTE	4Ω~16Ω
MAIN and REMOTE	8Ω~16Ω

■ FM TUNER SECTION

Frequency range	87.5~108 MHz
Sensitivity	
S/N 30 dB	1.9 μV (300Ω), 1.3 μV (75Ω)
S/N 26 dB	1.7 μV (300Ω), 1.2 μV (75Ω)
S/N 20 dB	1.5 μV (300Ω), 0.9 μV (75Ω)
IHF usable sensitivity	1.9 μV (IHF '58)
IHF 46 dB stereo quieting sensitivity	22 μV/75Ω
Total harmonic distortion	
MONO	0.15%
STEREO	0.2%
S/N	
MONO	60 dB (75 dB, IHF)
STEREO	58 dB (70 dB, IHF)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SA-103

English

Frequency response	20 Hz~15 kHz, +1 dB~ −2 dB
Alternate channel selectivity	75 dB
Capture ratio	1.2 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	75 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	50 dB
Stereo separation	
1 kHz	42 dB
10 kHz	32 dB
Carrier leak	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−50 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz

■ AM TUNER SECTION

Frequency range	525~1605 kHz
Sensitivity (S/N 20 dB)	30 μV, 300 μV/m
Selectivity	30 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

■ GENERAL

Power consumption	200W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W·H·D)	430 × 86 × 297 mm (16-15/16" × 3-3/8" × 11-11/16")
Weight	5.5 kg (12.1 lb.)

Deutsch

TECHNISCHE DATEN (Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

(DIN 45 500)

■ VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz	
beide Kanäle ausgesteuert	2 × 20W (4 Ω) 2 × 20W (8 Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz	
beide Kanäle ausgesteuert	2 × 20W (4 Ω) 2 × 20W (8 Ω)
Dauerton-Ausgangsleistung bei 1 kHz	
beide Kanäle ausgesteuert	2 × 24W (4 Ω) 2 × 22W (8 Ω)
Gesamtklirrfaktor	
Nennleistung bei 20 Hz ~ 20 kHz	0,08% (4 Ω) 0,04% (8 Ω)
Nennleistung bei 40 Hz ~ 16 kHz	0,08% (4 Ω) 0,04% (8 Ω)
Nennleistung bei 1 kHz	0,04% (4 Ω) 0,04% (8 Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz	0,025% (8 Ω)
halbe Nennleistung bei 1 kHz	0,009% (8 Ω)
−26 dB Leistung bei 1 kHz	0,1% (4 Ω)
50 mW Leistung bei 1 kHz	0,12% (4 Ω)
Intermodulationsfaktor	
Nennleistung bei 250 Hz: 8 kHz = 4:1, 4 Ω	0,08%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8 Ω	0,04%
Leistungsbandbreite	
beide Kanäle ausgesteuert bei −3 dB	10 Hz ~ 30 kHz (4 Ω)
Dämpfungsfaktor	15 (4 Ω), 30 (8 Ω)
Eingangsempfindlichkeit und -impedanz	
Phono	2,5 mV/47 kΩ
Aux	150 mV/22 kΩ
Tape Aufnahme/Wiedergabe (TAPE REC/PLAY)	180 mV/22 kΩ
Maximale TA-Eingangsspannung (1 kHz, eff.)	130 mV
Geräuschabstand	
Nennleistung (4 Ω)	
Phono	70 dB (nach IHF, A: 80 dB)
Aux, Tape	88 dB (nach IHF, A: 95 dB)
−26 dB Leistung (4 Ω) Phono	64 dB
Aux, Tape	66 dB
50 mW Leistung (4 Ω) Phono	62 dB
Aux, Tape	62 dB
Frequenzgang	
Phono	RIAA-Standardkurve ±0,8 dB (30 Hz ~ 15 kHz)
Aux, Tape	5 Hz ~ 70 kHz(−3 dB) ±0,2 dB (20 Hz ~ 20 kHz)
Klangregler	
Baßregler (BASS)	50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)	20 kHz, +10 dB ~ −10 dB
Gehörrichtige Lautstärkekorrektur (Loudness)	
(bei −30 dB Ausgangsleistung)	50 Hz, +9 dB
Ausgangsspannung und -impedanz	
Tape Aufnahme (TAPE REC OUT)	150 mV
Tape Aufnahme/Wiedergabe (TAPE REC/PLAY)	30 mV/82 kΩ
Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)	±1 dB
Übersprechdämpfung (Aux, 1 kHz)	55 dB
Kopfhörerpegel und -impedanz	210 mV/330 Ω
Lautsprecherimpedanz	
MAIN oder REMOTE	4 Ω ~ 16 Ω
MAIN und REMOTE	8 Ω ~ 16 Ω

■ UKW-TUNERTEIL

Wellenbereich		87,5 ~ 108 MHz
Eingangsempfindlichkeit		
S/R 30 dB		1,9 μV (300 Ω), 1,3 μV (75 Ω)
S/R 26 dB		1,7 μV (300 Ω), 1,2 μV (75 Ω)
S/R 20 dB		1,5 μV (300 Ω), 0,9 μV (75 Ω)
Nutzempfindlichkeit nach IHF		1,9 μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF		22 μV/75 Ω
Gesamtklirrfaktor	**Mono**	0,15%
	Stereo	0,2%
Geräuschabstand		
Mono		60 dB (75 dB nach IHF)
Stereo		58 dB (70 dB nach IHF)
Frequenzgang		20 Hz ~ 15 kHz (+1 dB ~ −2 dB)
Trennschärfe bei Störsender		75 dB
Einfangverhältnis		1,2 dB
Spiegelfrequenz-Dämpfung bei 98 MHz		55 dB
ZF-Dämpfung bei 98 MHz		75 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz		80 dB
AM-Unterdrückung		50 dB
Übersprechdämpfung		
1 kHz		42 dB
10 kHz		32 dB
Trägerrest		
19 kHz		−30 dB (−35 dB nach IHF)
38 kHz		−50 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)		±1,5 dB
Begrenzereinsatz		1,2 μV
Bandbreite		
ZF-Verstärker		180 kHz
UKW-Demodulator		1000 kHz
Antennenanschluß		300 Ω (symmetrisch) 75 Ω (unsymmetrisch)

Deutsch

■ AM-TUNERTEIL

Wellenbereiche	525 ~ 1605 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30 μV, 300 μV/m
Trennschärfe	30 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	50 dB
ZF-Dämpfung bei 1000 kHz	40 dB

■ ALLGEMEINE DATEN

Leistungsaufnahme	200 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 86 × 297 mm
Gewicht	5,5 kg

Français

CARACTERISTIQUES (Sujet á changement sans préaris.)

(DIN 45 500)

■ SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz~20 kHz, les deux canaux en circuit	2 × 20W (4Ω) 2 × 20W (8Ω)
Puissance de sortie continue de 40 Hz~16 kHz, les deux canaux en circuit	2 × 20W (4Ω) 2 × 20W (8Ω)
Puissance de sortie continue à 1 kHz les deux canaux en circuit	2 × 24W (4Ω) 2 × 22W (8Ω)
Distorsion harmonique totale	
à puissance nominale (20 Hz~20 kHz)	0,08% (4Ω) 0,04% (8Ω)
à puissance nominale (40 Hz~16 kHz)	0,08% (4Ω) 0,04% (8Ω)
à puissance nominale (1 kHz)	0,04% (4Ω) 0,04% (8Ω)
à demi-puissance (20 Hz~20 kHz)	0,025% (8Ω)
à demi-puissance (1 kHz)	0,009% (8Ω)
puissance de −26 dB à 1 kHz	0,1% (4Ω)
puissance de 50 mW à 1 kHz	0,12% (4Ω)
Distorsion d'intermodulation	
à puissance nominale à 250 Hz: 8 kHz=4:1, 4Ω	0,08%
à puissance nominale à 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0,04%
Réponse de fréquences les deux canaux en circuit, −3 dB	10 Hz~30 kHz (4Ω)
Coefficient d'amortissement	15 (4Ω), 30 (8Ω)
Sensibilité et impédance d'entrée	
PHONO	2,5 mV/47kΩ
AUX (AUX)	150 mV/22kΩ
BANDE ENREGISTREMENT/LECTURE (TAPE REC/PLAY)	180 mV/22kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)	130 mV
Signal/Bruit	
à puissance nominale (4Ω)	
PHONO	70 dB (IHF, A: 80 dB)
AUX, BANDE (AUX, TAPE)	88 dB (IHF, A: 95 dB)
puissance de −26 dB (4Ω)	
PHONO	64 dB
AUX, BANDE (AUX, TAPE)	66 dB
puissance de 50 mW (4Ω)	
PHONO	62 dB
AUX, BANDE (AUX, TAPE)	62 dB
Réponse de fréquence	
PHONO	Courbe nominale RIAA ±0,8 dB (30 Hz~15 kHz)
AUX, BANDE (AUX, TAPE)	5 Hz~70 kHz (−3 dB) ±0,2 dB (20 Hz~20 kHz)
Réglage de la tonalité	
BASSES (BASS)	50 Hz, +10 dB~ −10 dB
AIGUS (TREBLE)	20 kHz, +10 dB~ −10 dB
Compensateur physiologique (volume à −30 dB)	50 Hz, +9 dB
Tension de sortie et impédance	
SORTIE ENREGISTREMENT/BANDE (TAPE REC OUT)	150 mV
ENREGISTREMENT/LECTURE BANDE (TAPE REC/PLAY)	30 mV/82kΩ
Equilibrage des canaux, AUX 250 Hz~6 300 Hz	±1 dB
Séparation des canaux, AUX 1 kHz	55 dB
Niveau de sortie des casques et impédance	210 mV/330Ω
Impédance de charge	
PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)	4Ω~16Ω
PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)	8Ω~16Ω

■ SECTION SYNTONISATEUR FM

Gamme de fréquence	87,5~108 MHz
Sensibilité	
S/B 30 dB	1,9 μV (300Ω), 1,3 μV (75Ω)
S/B 26 dB	1,7 μV (300Ω), 1,2 μV (75Ω)
S/B 20 dB	1,5 μV (300Ω), 0,9 μV (75Ω)
Sensibilité utilisable IHF	1,9 μV (IHF '58)
Sensibilité stéréo au seuil de 46 dB, IHF	22 μV/75Ω
Distorsion harmonique totale	
MONO	0,15%
STEREO	0,2%
Signal/Bruit	
MONO	60 dB (75 dB, IHF)
STEREO	58 dB (70 dB, IHF)
Réponse de fréquence	20 Hz~15 kHz, +1 dB~ −2 dB
Sélectivité alternée par canal	75 dB
Taux de capture	1,2 dB
Rejection d'image à 98 MHz	55 dB
Rejection FI à 98 MHz	75 dB
Rejection de réponse parasite à 98 MHz	80 dB
Suppression AM	50 dB
Séparation stéréophonique	
1 kHz	42 dB
10 kHz	32 dB
Fuite de porteuse	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−50 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz~6,300 Hz)	±1,5 dB
Point de limite	1,2 μV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz

■ SECTION SYNTONISATEUR AM

Gamme de fréquence	525~1605 kHz
Sensibilité (S/B 20 dB)	30 μV, 300 μV/m
Sélectivité	30 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

■ DIVERS

Consommation	200W
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 86 × 297 mm
Poids	5,5 kg

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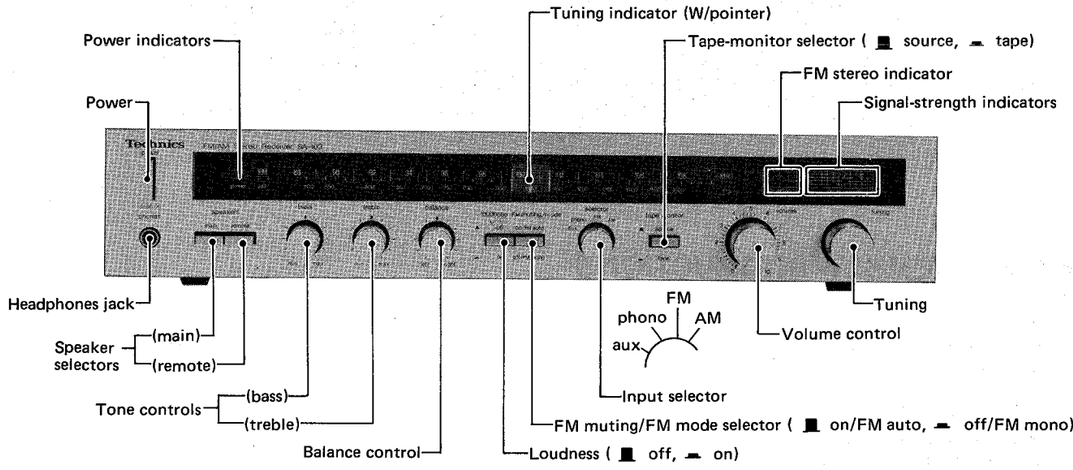
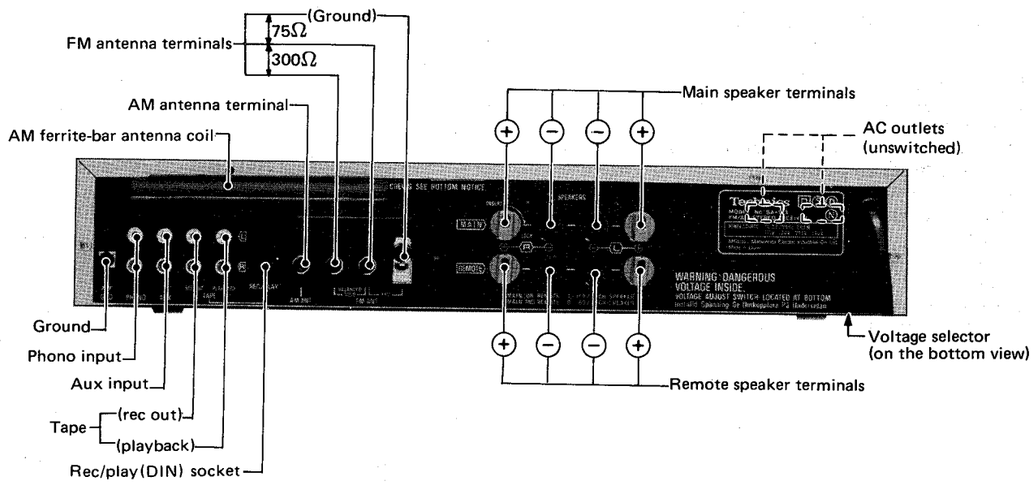
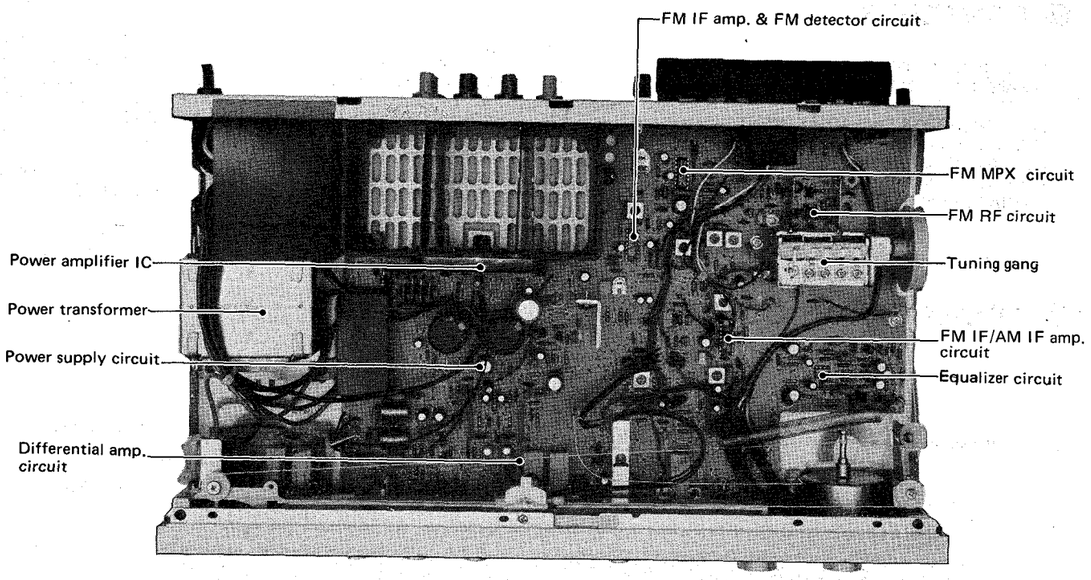
■ LOCATION OF CONTROLS





*** The product for destination [XA] is equipped with AC outlets.**



■ DISASSEMBLY INSTRUCTIONS

- **How to remove the cabinet**

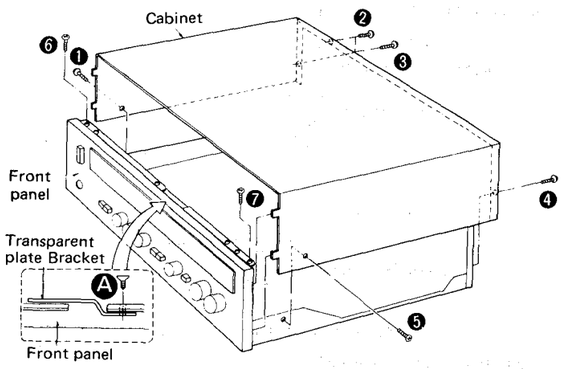
1. Remove the 5 setscrews (Fig. 1: ❶ ~ ❺) of the cabinet.
2. Remove the cabinet.

- **How to remove the front panel**

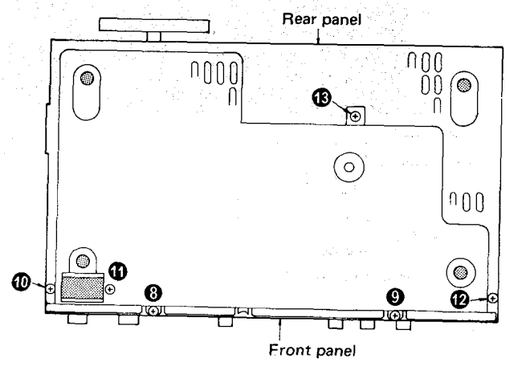
1. Remove the cabinet. (Refer to the section **"How to remove the cabinet."**)
2. Remove the 4 setscrews (Fig. 1: ❻ , ❼ and Fig. 2: ❽ , ❾) of the front panel.
3. Remove the 1 setscrew (Fig. 1: Ⓐ) of the transparent plate bracket, then remove the front panel.

- **How to remove the dial scale**

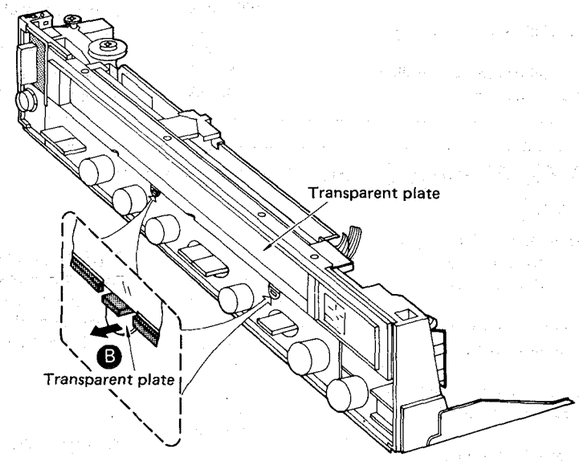
1. Remove the cabinet. (Refer to the section "**How to remove the cabinet.**")
2. Remove the front panel. (Refer to the section "**How to remove the front panel.**")
3. Pull up the two claws at the bottom of the transparent plate in the direction of the arrow Ⓑ (Fig. 3).
4. Remove the 2 dial scale holders of the front chassis. (see Fig. 4)
5. Remove the power indicator P.C.B., remove the dial scale. (See Fig. 4)



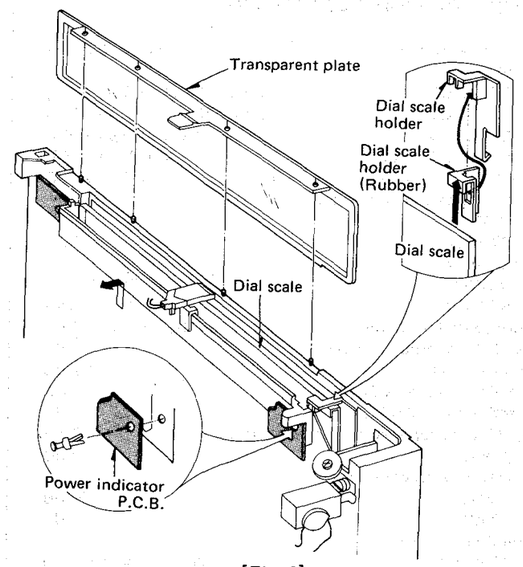
[Fig. 1]



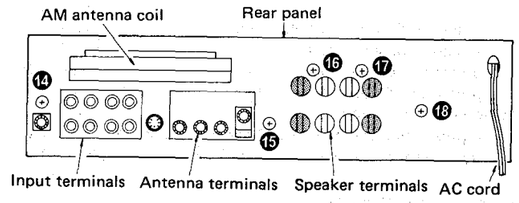
[Fig. 2]



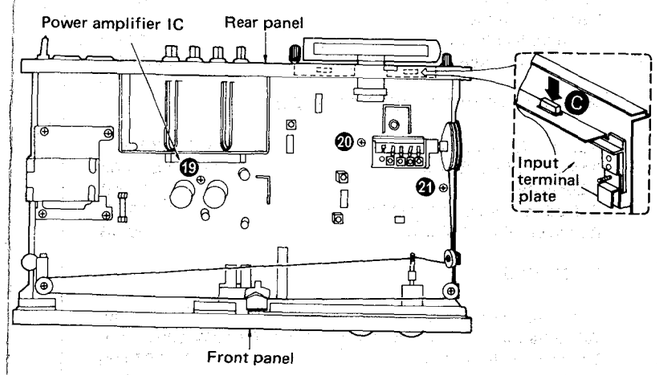
[Fig. 3]



[Fig. 4]



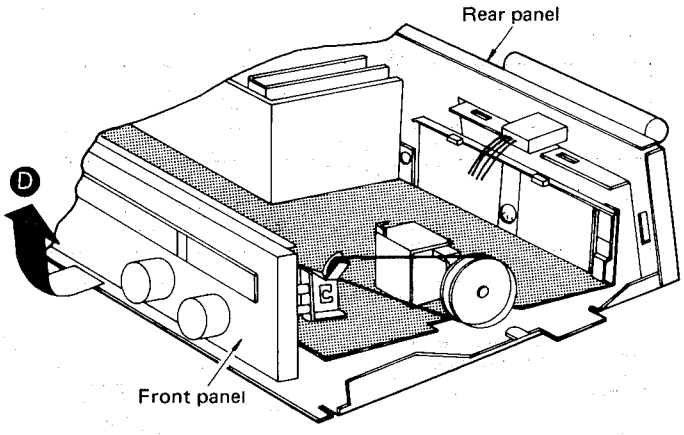
[Fig. 5]



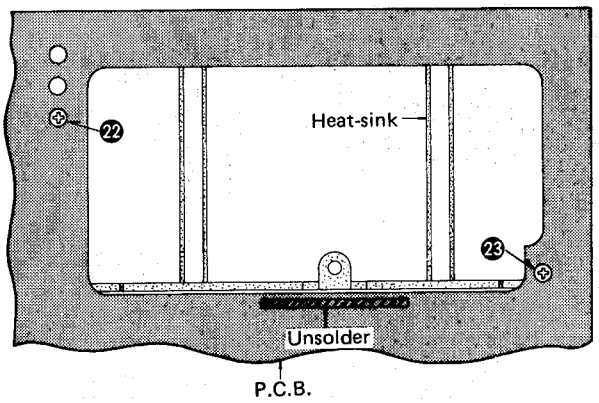
[Fig. 6]

- **How to remove the power amplifier IC**

1. Remove the cabinet. (Refer to the section "**How to remove the cabinet.**")
2. Remove the 6 setscrews (Fig. 2: ❽ , ❾ and ❿ ~ ⓭) and 5 setscrews (Fig. 5: ⓮ ~ ⓲) of the rear panel.
3. Remove the 3 setscrews (Fig. 6: ⓳ ~ ㉑).
4. Pressing the claws of the input terminal plate and antenna terminal plate in the direction of arrow Ⓒ (Fig. 6), lift up the front panel in the direction of arrow Ⓓ (Fig. 7). Then, the front panel can be removed from the rear panel.
5. Remove the 2 setscrews (Fig. 8: ㉒ , ㉓) of the heat-sink.
6. Unsolder the power amplifier IC. (Fig. 8).
7. Remove the 2 setscrews (Fig. 9: ㉔ , ㉕) used to secure the power amplifier IC on the heat sink, and then pull the power amplifier IC.
8. When mounting the power amplifier IC, apply silicon compound (or equivalent heat diffuser) to the back of power amplifier IC.

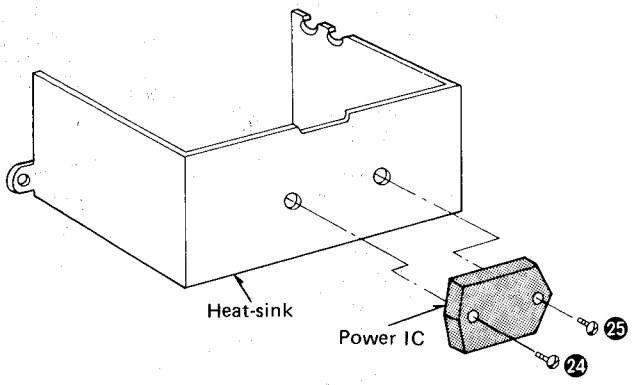


[Fig. 7]



Bottom view

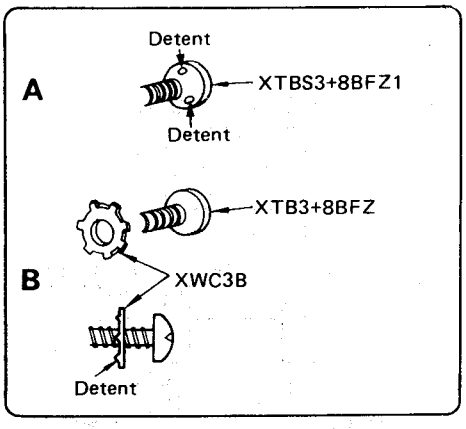
[Fig. 8]



[Fig. 9]

Note 1: When checking or repairing, remove the speaker from the speaker terminal. If it is necessary to check or repair without removing the speaker from the terminal, short-circuit the phono input terminal beforehand.

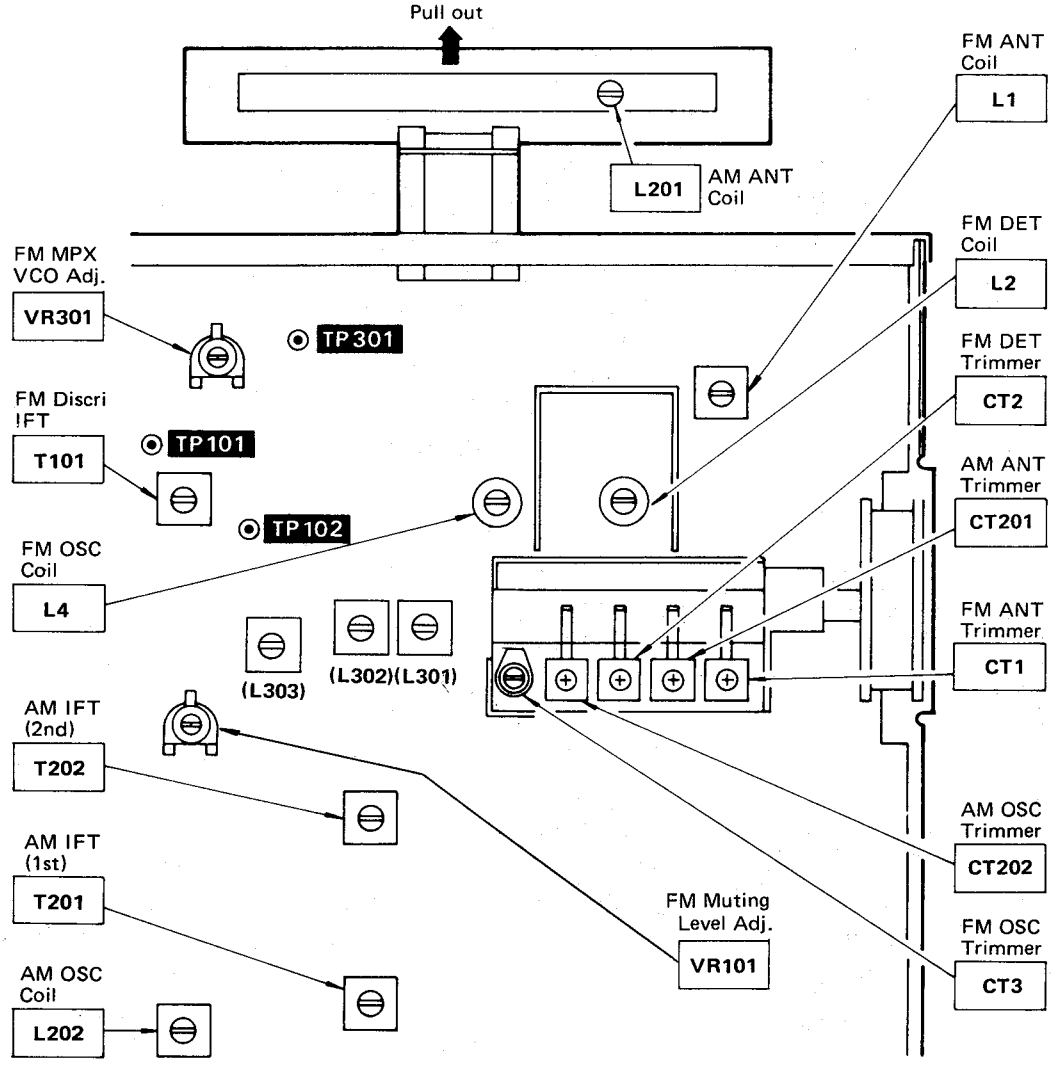
Note 2: Setscrew ⑭ (Fig. 5) is screw with detents (Part No.: XTBS3+8BFZ1) as shown in Fig. 10-A in order to make the contact of electric circuit perfect.
Take care not to mix up these screws with other screws. When substituting, use a 3 x 8mm tapping screw (Part No.: XTB3+8BFZ) and toothed lock washer (Part No.: XWC3B) as shown in Fig. 10-B. The teeth of the lock washer should be positioned on the chassis side.

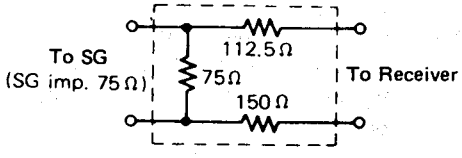


[Fig. 10]

■ ADJUSTMENT POINTS

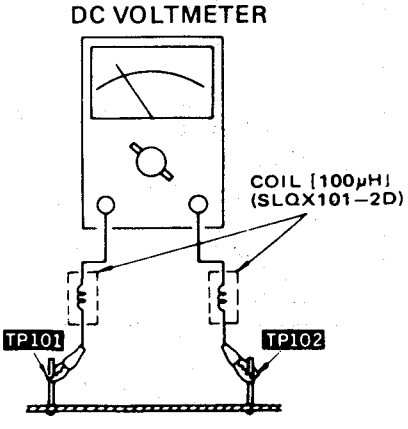
Notes: L301, L302 and L303 have been already adjusted. so, do not turn the core.



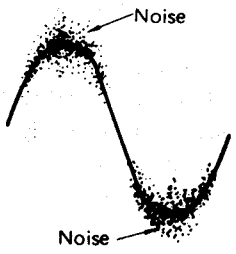


300Ω FM dummy antenna

[Fig. 11] (Abb. 11)

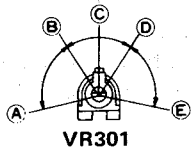


[Fig. 12] (Abb. 12)



AF output wave form

[Fig. 13] (Abb. 13)



VR301

A – B, D – E: Stereo OFF Position.
B – D: Stereo ON Position (indicator lighting).
C: Adjust Point of Pilot Circuit.

[Fig. 14] (Abb. 14)

■ MEASUREMENTS AND ADJUSTMENTS ——— English

*Setting and Equipment used
1. AC electronic voltmeter (VTVM)
2. AM signal generator (AM-SG)
3. Maintain line voltage at rated voltage.
4. Output of signal generator should be no higher than necessary to obtain an output reading.
5. Pull the AM ferrite-bar antenna (L201) outward.
6. Set input selector to { "AM" (AM adjustment) / "FM" (FM adjustment)
7. Use a non-metal screwdriver for the adjustment.
8. Set speaker selector to "main" position.

Step No.	FM/AM SIGNAL GENERATOR CONNECTION	FM/AM SIGNAL GENERATOR FREQUENCY	DIAL SETTING	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input)	450kHz (30% Mod. with 400Hz)	Point of non-interference	Connect AC VTVM or scope to "SPEAKER" terminals.	T201 (1st IFT) T202 (2nd IFT)	Adjust the input frequency and adjustment points so that the output becomes maximum.
	AM-RF ADJUSTMENT					
2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	600kHz (30% Mod. with 400Hz)	600kHz	Connect AC VTVM or scope to "SPEAKER" terminals.	L202 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output, Adjust ferrite core of L201 by screw driver.
3		1500kHz (30% Mod. with 400Hz)	1500kHz	Connect AC VTVM or scope to "SPEAKER" terminals.	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps 2 and 3.

*Equipment used
1. FM signal generator (FM-SG)
2. Stereo modulator
3. Distortion analyser
4. Oscilloscope
5. DC electronic voltmeter (VTVM)
6. Frequency counter (19kHz and 108MHz measurable)
7. FM 300Ω dummy antenna (Fig. 11)

*Preparation of FM signal generator (FM-SG)
1. Connect stereo modulator to FM-SG
2. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
3. The standard input of the set is 60dB (1mV), 400Hz 100% modulation (Because of using dummy antenna, SG output must be 12dB plus (IHF). That is, when input is 60dB, SG output is to be 72dB.

	FM IF ADJUSTMENT					
4		No-Signal.	Point of non-interference	Connect DC VTVM to TP101, TP102 terminals through choke coil (Refer to fig. 12)	T101 (DISCRI IFT)	• Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range.
	FM RF ADJUSTMENT					
5	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	90MHz (100% Mod. with 400Hz) weak input	90MHz	Connect scope to "SPEAKER" terminals.	L4 (OSC Coil) L2 (RF DET Coil) L1 (ANT Coil)	• Add weak input so that noise is included in the output wave form. • Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 13) • Repeat the steps 5 and 6 until the frequency correctly matches the dial scale.
6		106MHz (100% Mod. with 400Hz weak input	106MHz	Connect scope to "SPEAKER" terminals.	CT3 (OSC Trimmer) CT2 (RF DET Trimmer) CT1 (ANT Trimmer)	
	FM MPX PILOT (VCO) ADJUSTMENT					
7	USING FREQUENCY COUNTER: 1 100MHz Non-modulated mono signal applied to set. 2 FM muting/mode switch to "on/FM auto". 3 Connect frequency counter to TP301 through resistor (100kΩ). 4 Adjust **VR301** to 19kHz, ±30Hz.			USING ALTERNATE SYSTEM: 1 Apply stereo signal from generator or stereo station to receiver. 2 Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in fig. 14.		
	FM MUTING LEVEL ADJUSTMENT					
8	Connect FM-SG to FM antenna terminal through 300 Ω FM dummy antenna. (Apply 16dB [product for [XA] only 12dB] to antenna terminal)	100 MHz (100% Mod. with 400Hz)	100 MHz	Connect AC VTVM or scope to "Speaker" terminals of the set.	VR101(Muting level)	1. With the FM muting/FM mode switch set to "on/auto", adjust VR101 so that the output is given with muting condition released.

■ MESSUNGEN UND JUSTIERUNGEN ——— Deutsch

• Stellungen und zu benutzende Geräte
1. Elektronische Voltmeter für Wechsel-und Gleichstrom (VTVM)
2. AM (MW)-Meßsender (AM-SG)
3. Netzspannung auf ihren Sollwerthalten.
4. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
5. Die AM-Ferritstabantenne (L201) herausziehen.
6. Bereichsschalter . . . . . { AM (AM abgleich) / FM (FM abgleich)
7. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.
8. Wellenbereichsschalter . . . . . main

Nr.	FM/AM (MW)-MESSENDER ANSCHLUSS	FM/AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	AM (MW)-ZF-ABGLEICH					
1	Einen MW-Signal generator über einen 200pF Kondensator mit dem MW-Antenneneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Starker Eingang)	450kHz (400Hz Modulat., 30%)	Kein Empfang	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustieren, daß der Ausgang den maximalen Wert erreicht.
	AM (MW)-HF-ABGLEICH					
2	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Antenneneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	600kHz (400Hz Modulat., 30%)	600kHz	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	L201 (MW Ant. Spule) L202 (MW Osc. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
3		1500kHz (400Hz Modulat., 30%)	1500kHz	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	CT201 (MW Ant. Trimmer) CT202 (MW Osc. Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die schritte (2) une (3) wiederholen.

• Verwendete Einrichtungen
1. UKW-Meßsender (FM-SG)
2. Stereo-Modulator (oder Trennmesser)
3. Verzerrungsmesser
4. Oszilloskop
5. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM)
6. Signalfrequenzmesser (meßber für 19kHz und 108MHz)
7. UKW300-Ohm Kunstantenne (Abb. 11)

• Vorbereitung AM UKW-Messender (FM-SG)
1. Stereo-Modulator an FM-SG anschließen.
2. SG-Ausgang über 300-Ohm UKW Kunstantenne an den Antenneneingang des Gerätes schließen.
3. Der normale Eingang des Gerätes beträt 60dB (1mV), 400Hz 100% Modulation. (Wegen Verwendung der Kunstantenne muß der Signalausgang 12dB plus (IHF) sein: d.h. beim Eingang von 60dB soll der Signalausgang 72dB sein.)

	UKW-ZF-ABGLEICH					
4		Kein Signal	100.0MHz	Ein Gleichstromröhren-voltmeter zwischen TP101 und TP102 über eine Drosselspule verbinden (Siehe Abb. 12)	T101 (Diskriminator FT)	Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF-ABGLEICH					
5	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87.5MHz (400Hz Modulat., 100%)	87.5MHz (Frequenz min.)	Oszilloskop über den Lautsprecher schließen.	L4 (Osc. Spule)	1. Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 13) 3. Die Einstellung von (5), (6) und (7) wieder holen, bis die Frequenz mit der Skala übereinstimmt.
6		90.0MHz (400Hz Modulat., 100%)	90.0MHz		L2 (HF Det. Spule) L1 (Ant. Spule)	
7		106MHz (400Hz Modulat., 100%)	106MHz		CT3 (Osc. Trimmer) CT2 (HF Dec. Trimmer) CT1 (Ant. Trimmer)	
	UKW-STEREO-DEKODER-ABGLEICH					
8	UNTER VERWENDUNG EINES ZÄHLERS: 1. Unmoduliertes Mono-Signal 100MHz in das Gerät speisen. 2. FM muting/mode-Schalter auf "on/auto" stellen. 3. Zähler über einen Widerstand 100K ohm an TP301 schließen. 4. **VR301** auf 19kHz ± 30Hz einstellen.			ALTERNATIV-MEß METHODE: 1. Stereosignal entweder von einem Stereogenerator. oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 14 gezeigt.		
	UKW-STUMMABSTIMMUNGS PEGELANZEIGER					
9	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (16dB in den Antenneneingang leiten.)	100 MHz (400Hz Modulat., 100%)	100 MHz	Oszilloskop oder Wechselstrom-Voltmeter über den Lautsprecher schließen.	VR101 (UKW-Muting)	1. "Muting" Schalter auf "on" stellen. VR101 so einstellen, daß der Ausgang unter Bewirken der Dämpfung gegeben wird.

■ MESURAGES ET RÉGLAGES — Français

• Réglage et équipement utilisé

1. Voltmétre électronique de courant altènatif et de courant continu (VTVM).
2. Générateur de signal AM (AM-SG)
3. Conservel la tension du secteur à la tension nominale.
4. Le signal du générateur ne doit pas étre plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
5. Retirer l'antenne à tige de ferrite (L201) de la modulation d'amplitude.
6. Sélecteur de gamme . . . . . {AM (Reglage de AM) / FM (Reglage de FM)
7. Utiliser un tournevis non-métalique pour le réglage.
8. Sélecteurs de gammes d'ondes . . . main

No.	FM/AM GENERATEUR BRANCHEMENT	FM/AM GENERATEUR FREQUENCE	FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	REGLAGE DE FI-AM					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée sous puissante)	450kHz (modulé à 30% par 400Hz)	Point sans signal	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	T201 (1 transfo FI) T202 (2 transfo FI)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
	REGLAGE DE RF-AM					
2	Brancher la AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	600kHz (modulé à 30% par 400Hz)	600kHz	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	L201 (Bobine Ant.) L202 (Bobine Osc.)	1. Régler au maximum de signal de sortie. 2. Régler la noyau ferrite de L201 à l'aide d'un tournevis.
3		1500kHz (modulé à 30% par 400Hz)	1500kHz	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	CT201 (Trimmer Ant.) CT202 (Trimmer Osc.)	1. Régler au maximum de signal de sortie. 2. Répéter les étapes (2) et (3).

• Equipment utilisé

1. Générateur du signal FM (FM-SG)
2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
3. Jauge de distorsion.
4. Oscilloscope.
5. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
6. Compteur de fréquence (19kHz et 108MHz mesurable).
7. Antenne fictive FM, 300 ohms (Fig. 11)

• Préparation du génerateur de signal FM (FM-SG)

1. Brancher la commande de réglage stéréophonique à FM-SG.
2. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM, 300 ohms.
3. L'entrée standard de l'appareil est de 60dB (1mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenna fictive, la sortie SG doit être de plus 12dB (IHF). Ca qui signifie que quand l'entrée est de 60dB, la sortie SG doit être de 72dB.

No.						
	REGLAGE DE FI-FM					
4		Sans Signal	100.0MHz	Brancher le voltmètre électronique à c.c. aux bornes **TP101** et **TP102** (Voir la Fig.12)	T101 (Transfo FI discri.)	Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	REGLAGE DE RF-FM					
5	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	90.0MHz (modulé à 100% par 400Hz)	90.0MHz	Branchez un oscill-oscope sur les bornes de hautparleur de l'amplituner.	L4 (Bobin Osc.) L2 (détecteur) L1 (Bobin Ant.)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire la réglage de telle sorte que la forme de londe de sortie soit verticalement symétrique. (Voir Fig. 13) 3. Refaire les réglages (5) et (6) jusqu'à ce que la fréquence corresponde correctement avec l'échells du cadran
6		106MHz (modulé à 100% par 400Hz)	106.0MHz		CT3 (Trimmer OSC) CT2 (détecteur) CT1 (Trimmer Ant.)	

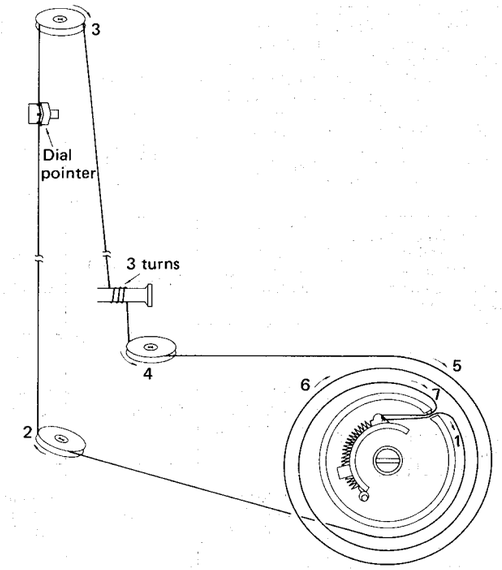
ALIGNEMENT DU PILOTE MULTIPLEX FM

No.	AVEC UN ERÉQUENCEMÉNTRE	PAR UN OUTRE SYSTÈME
7	1. Signal mono 100MHz non modulé appliqué à l'appareil. 2. Commutateur de silencieux sur "on/auto". 3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ. 4. Régler **VR301** sur 19kHz ± 30Hz.	1. Appliquez à l'appareil un signal stéréo provenant d'un générateur ou de la réception d'un émetteur. 2. Régler **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume. Collez le curseur le **VR301** comme indiqué sur la fig. 14.

No.						
	REGLAGE DU SEUIL DU SILENCIEUX D'ACCORD					
8	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Appliquer 16dB à la borne de l'antenne.)	100 MHz (modulé à 100% par 400Hz)	100 MHz	Branchez un c.a. voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'amplituner.	VR101	1. Avec le commutateur de mode/réglage silencieux "on/auto", régler le VR101 de telle sorte que la sortie fournie avec le réglage silencieux en position déclenchée.

■ DIAL CORD INSTALLATION GUIDE

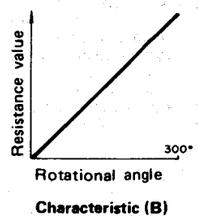
* For threading a fresh cord, proceed as follows.
  1. Prepare a fresh cord more than 180cm (70-15/16") in length.
  2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor.)
  3. Direct the cord in the order from 1 to 7.
  4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
  5. Fix the knot of the cord with the adhesive.



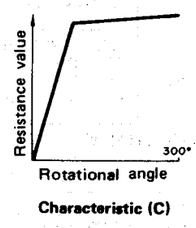
■ VARIABLE RESISTORS

• Alteration of resistance values according to the rotational angles of variable resistors

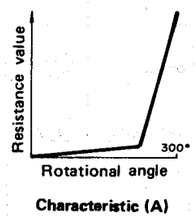
Alteration characteristics as shown below are often used for sets. All are intended to keep the frequency response of the set at optimum levels, and are used according to the types of circuits. For example, characteristic (B) is used for sound volume adjustment; (C) is for bass and treble sound quality adjustment; and (G) is for the adjustment of sound balance between the right and left.



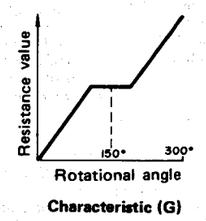
Characteristic (B)



Characteristic (C)

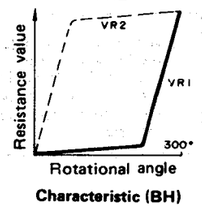


Characteristic (A)

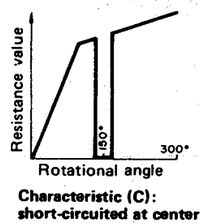


Characteristic (G)

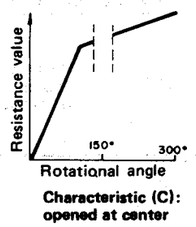
VR1 is inter locked with VR2



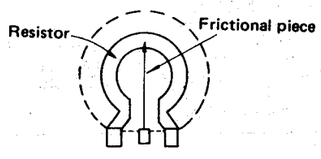
Characteristic (BH)



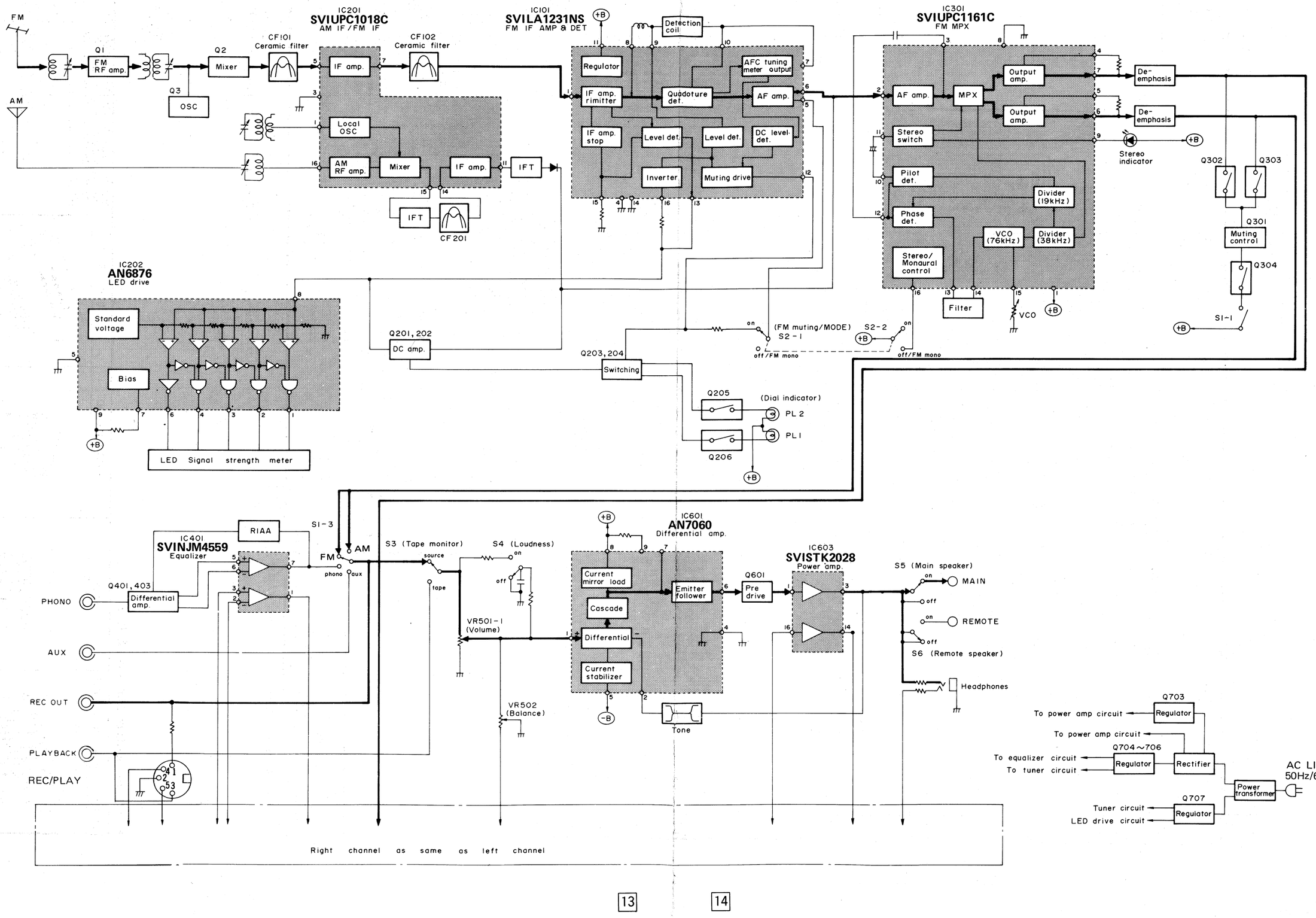
Characteristic (C): short-circuited at center



Characteristic (C): opened at center



■ BLOCK DIAGRAM



■ TECHNICAL GUIDE

The power amplifier IC (SVISTK2028) is provided with a protection circuit.

1. Muting (shock noise prevention) with power switch ON.

(1) When power is supplied, negative voltage is applied to the emitter of switching transistor (Q703).
(2) Positive voltage flows from the regulator (Q707) to R709 and R708 to turn D705 and Q703 ON. (It takes a few seconds until Q703 turns ON due to time constant of C706).
(3) When Q703 turns ON, negative voltage is applied to the pin ⑤ of input amplifier IC (AN7060) causing the input amplifier to operate.
* The signal is applied to the power amplifier a few seconds later so that shock noise can be prevented.

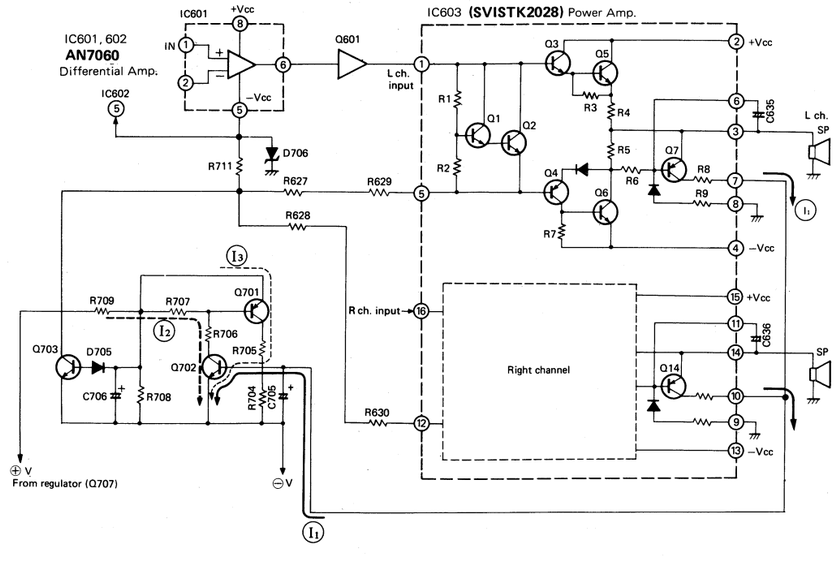
2. Muting (shock noise prevention) with power switch OFF.

(1) When power supply is cut off, the voltage applied to Q703 drops at the base faster than the negative voltage at the emitter connected to the large capacity condenser, thus turning off D705 and Q703.
(2) Input amplifier is off with Q703 off.
* The signal is cut off on the input side while the operation voltage of power amplifier still remains, thus preventing shock noise.

3. Operation of the protection circuit with speaker terminal short-circuited.

(1) Transistor Q7 in the power amplifier IC (SVISTK2028) is usually OFF, but when the speaker terminal is short-circuited to the ground, a large amount of current flows to Q6, causing a voltage to be generated at R5.
(2) The voltage causes Q7 to turn ON, then I_1 flows to raise the base potential of Q702. And Q702 turns ON.
(3) As Q702 is ON, I_2 flows to generate a voltage at R707, and then Q701 turns ON.
(4) I_3 flows with Q701 turned ON, I_3 flows to hold Q702 ON.
(5) The current flowing in R709 increases due to I_2, and the positive voltage from regulator (Q707) drops, causing D705 to turn off.
(6) In other words, Q703 turns OFF and the negative power supply to the input amplifier is discontinued.
* This condition continues until power supply switch is set OFF.

A few minutes after the power switch is set to ON, if no sound is produced while the operation is normal, cut off the power supply and check the speaker connections and the input equipment.



■ REPLACEMENT PARTS LIST (Electrical Parts)

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

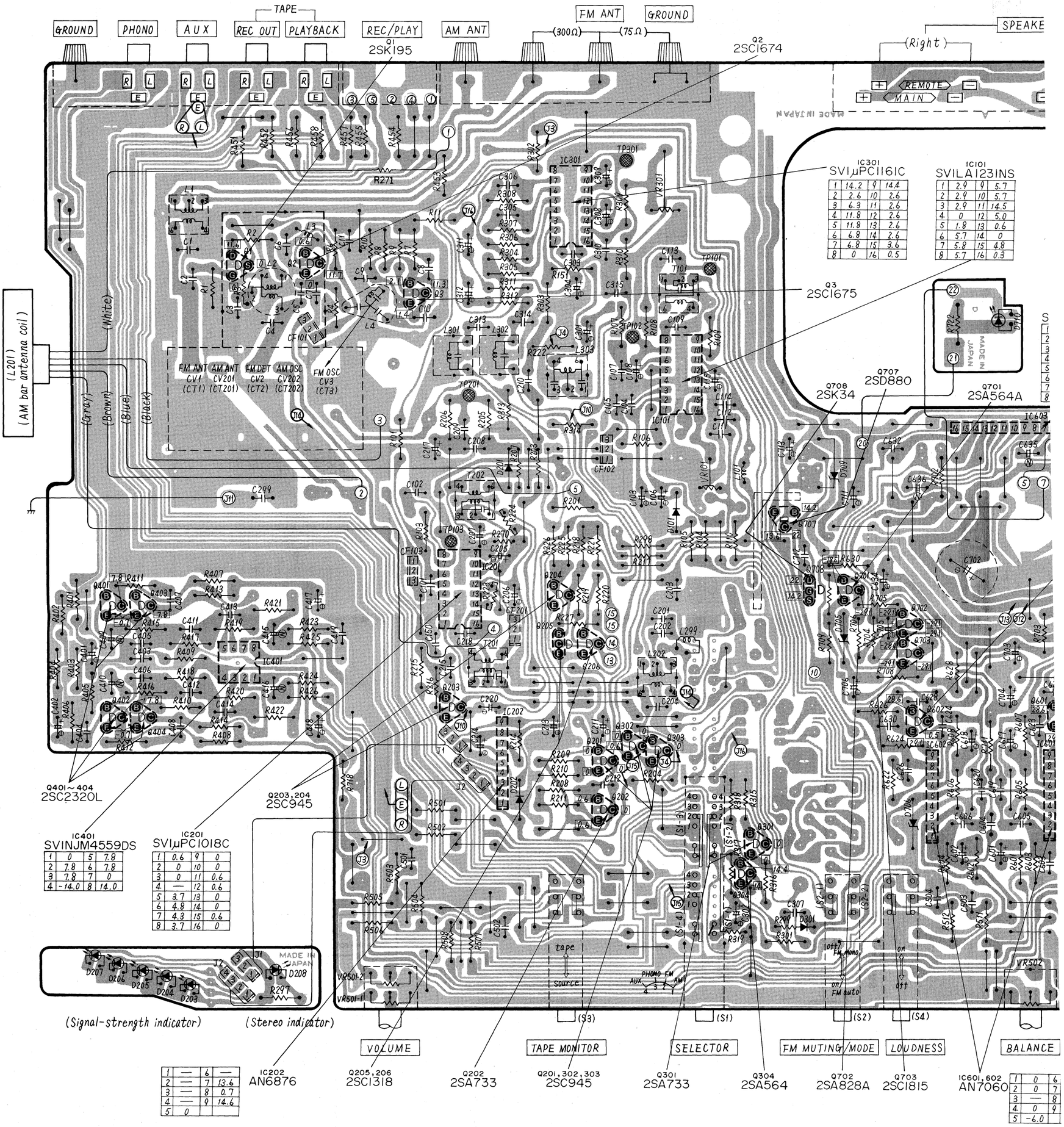
Ref. No.		Part No.	Part Name & Description
INTEGATED CIRCUITS			
IC101		SVILA1231NS	IC, FM IF Amplifier & Detector
IC201		**RVIUPC1018CF**	IC, AM Converter, FM IF Amplifier
IC202		AN6876	IC, LED Amplifier
IC301		SVIUPC1161C	IC, FM Stereo Decoder (MPX)
IC401		SVINJM4559DD	IC, Equalizer Amplifier
IC601, 602		AN7060F	IC, Differential Amplifier
IC603		SVISTK2028B	IC, Power Amplifier
TRANSISTORS			
Q1		2SK195–H1	Transistor, FM RF Amplifier
Q2		2SC1674–M	Transistor, FM Mixer
Q3		2SC1675–L	Transistor, FM Local Socillator
Q201		**2SC945–Q**	Transistor, Switching
Q202		2SA733–P1	Transistor, Switching (Use inranks P1 or P2)
Q203, 204		**2SC945–Q**	Transistor, Switching
Q205, 206		**2SC1318–Q**	Transistor, Switching (Use in ranks Q or R)
Q301		2SA733–P1	Transistor, Muting Control
Q302, 303		**2SC945–Q**	Transistor, Muting
Q304		**2SA722–S**	Transistor, Switching (Use in ranks R or S)
Q401, 402, 403, 404		2SC2320L–F	Transistor, Differentia/Amplifier (Use in ranks E, F or G)
Q601, 602		2SA992	Transistor, Pre Drive
Q701, 705		**2SA564AQ**	Transistor, Regulator (Use in ranks Q, R or S)
Q702		**2SC828AQ**	Trnasistor, Regulator (Use in ranks Q or R)
Q703		2SC1815–G	Transistor, Regulator (Use in ranks BG, GR or BL)
Q704		**2SC1567–Q**	Transistor, Regulator (Use in rank Q or R)
Q706		2SA1015–Y	Transistor, Regulator (Use in rank O or Y)
Q707		2SD880–Y	Transistor, Regulator
Q708		2SK34–D1	Transistor, Hold (Use in ranks D1 or D2)
DIODES			
D101, 202, 301		**MA161**	Diod, Detector
D201		**2–0A99**	Diode, AM Detector
D208		SVDPR5532K	Light Emitting Diode, Signal Strengh Indicator (Red)
D203～207		SVDAY2434D	Light Emitting Diode, Signal Strength Indicator (Yellow)
D701～704	⚠	SVDS2V20	Diod, Rectifier
D705		SVDMZL316A	Diod, 16V Zener
D706		SVDMZ306C	Diode, 6V Zener
D707		SVDMZL314C	Diode, 14V Zener
D708	⚠	SVDSR1K2	Diode, Rectifier
D709		SVDMZL314C3	Diode, 14V Zener
D710		SVDPR5532K	Light Emitting Diode, Power (Red)
COILS and TRANSFORMERS			
L1		SLA4N15	Coil, FM Antenna
L2		SLD4P65–P	Coil, FM Detector
L3		ELQ5A77	Coil, Choke
L4		SLO4P95–P	Coil, FM Oscillator
L101		SLQX101–3M	Coil, FM Discri
L201		SLF2C39	Coil, FM Antenna
L202		SLO2C1–P	Coil, AM Oscillator
L299		RLQY15G5–0	Coil
L301, 302		SLM1C63–M	Coil, MPX Filter
L303		SLM1C61–P	Coil
L601, 602		SLQY15G–30	Coil, Choke
T101		SLI4C527–Z	Transformer, FM Detector
T201		SLI2C129R	Transformer, FM IFT (1st)
T202		SLI2C413R	Transformer, FM Oscillator
T701	⚠	SLT5M165	Transformer, Power Source
COMPONENT COMBINATIONS			
Z701, 702		SXRFS203ZSM	Component Combination, 0.01μF x 2
CERAMIC FILTERS			
CF101, 103		SVFE107MA8A	Ceramic Filter, Red, 10.7MHz (Use pair ranks as same as CF101, 103)
		SVFE107MA8B	Ceramic Filter, Blue, 10.67MHz
		SVFE107MA8C	Ceramic Filter, Orange, 10.73MHz
		SVFE107MA8D	Ceramic Filter, Black, 10.64MHz
		SVFE107MA8E	Ceramic Filter, White, 10.76MHz
CF102		SVFE107MM–A	Ceramic Filter, Red, 10.7MH
		SVFE107MM–B	Ceramic Filter, Blue, 10.68MHz
		SVFE107MM–C	Ceramic Filter, Orange, 10.72MHz
		SVFE107MM–D	Ceramic Filter, Brown, 10.66MHz
		SVFE107MM–E	Ceramic Filter, Gray, 10.74MHz

Ref. No.		Part No.	Part Name & Description
CF201		SVFSFU450B	Ceramic Filter, AM 450kHz
FUSES			
F1	⚠	XBA2C16TRO	Fuse, T1.6A (250V)
F2	⚠	XBA2C08TRO	Fuse, T800mA (250V)
F3	⚠	XBA2C06TRO	Fuse, T630mA (250V)
LAMPS			
PL1	⚠	XAMR86S300A	Lamp, Dial 12V 0.06A (Colour Green)
PL2	⚠	XAMR86S300	Lamp, Dial 12V 0.06A (Colour Orange)
SWITCHES			
S1–1～1–3		SSR165	Switch, Function
S2–1～2–2		SSH2015	Switch, FM Muting, Loudness
S4			
S3		SSH165	Switch, Tape Monitor
S5, 6		SSH2017	Switch, Speaker Selector
S7	⚠	ESB90619S	Switch, Power Source
S8	⚠	ESE37200	Switch, Voltage Adjuster
VARIABLE RESISTORS			
VR101		**EVNM4AA00B54**	Muting Level Adjustment 50kΩ(B)
VR301		EVTS3MA00B53	PLL Voltage Adjustment, 5kΩ (B)
VR501		EWJGFA066B15	Volume Control, 100kΩ (B)
VR502		EWHHMA531G15	Balance Control, 100kΩ (G)
VR601		EWJFC0066C15	Treble Control, 100kΩ (C)
VR602		EWJFCY066530	Bass Control, 100kΩ (C)
VARIABLE CAPACITOR			
CV1, 2, 3, 201, 202 [CT1, 2, 3, 201, 202]		ECV5MD34X71G	Tuning Gang, FM & AM (with Trimmer)
RESISTORS			
R1		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R2		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R3		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ±5%
R4		**ERD25TJ474**	Carbon, 1/4W, 470kΩ, ±5%
R6		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ±5%
R7		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ±5%
R8		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R9		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R10		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ±5%
R11		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ±5%
R101		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ±5%
R103		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ±5%
R104		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ±5%
R105		**ERD25TJ683**	Carbon, 1/4W, 68kΩ, ±5%
R106		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ±5%
R107		**ERD25TJ103**	Carbon, 1/4W, 10kΩ, ±5%
R108		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R109		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ±5%
R110		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ±5%
R151		**ERD25TJ183**	Carbon, 1/4W, 18kΩ, ±5%
R201		**ERD25TJ273**	Carbon, 1/4W, 27kΩ, ±5%
R203		**ERD25TJ103**	Carbon, 1/4W, 10kΩ, ±5%
R204		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ±5%
R205		**ERD25FJ471**	Carbon, 1/4W, 470Ω, ±5%
R206		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ±5%
R207		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R208		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R209		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ±5%
R210, 211		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ±5%
R214		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ±5%
R215		**ERD25TJ274**	Carbon, 1/4W, 270kΩ, ±5%
R216		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R217, 218		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R219, 220		**ERD25FJ682**	Carbon, 1/4W, 6.8kΩ, ±5%
R221		**ERD25FJ560**	Carbon, 1/4W, 56Ω, ±5%
R222		**ERD25TJ105**	Carbon, 1/4W, 1MΩ, ±5%
R223		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R224		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R225		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R226		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R227		**ERD25TJ274**	Carbon, 1/4W, 270kΩ, ±5%

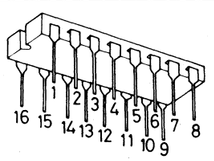
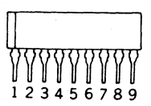
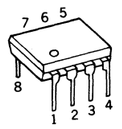
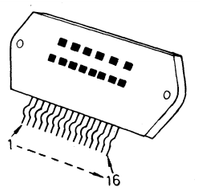
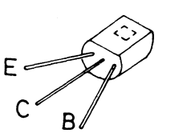
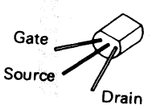
Continued on page 24

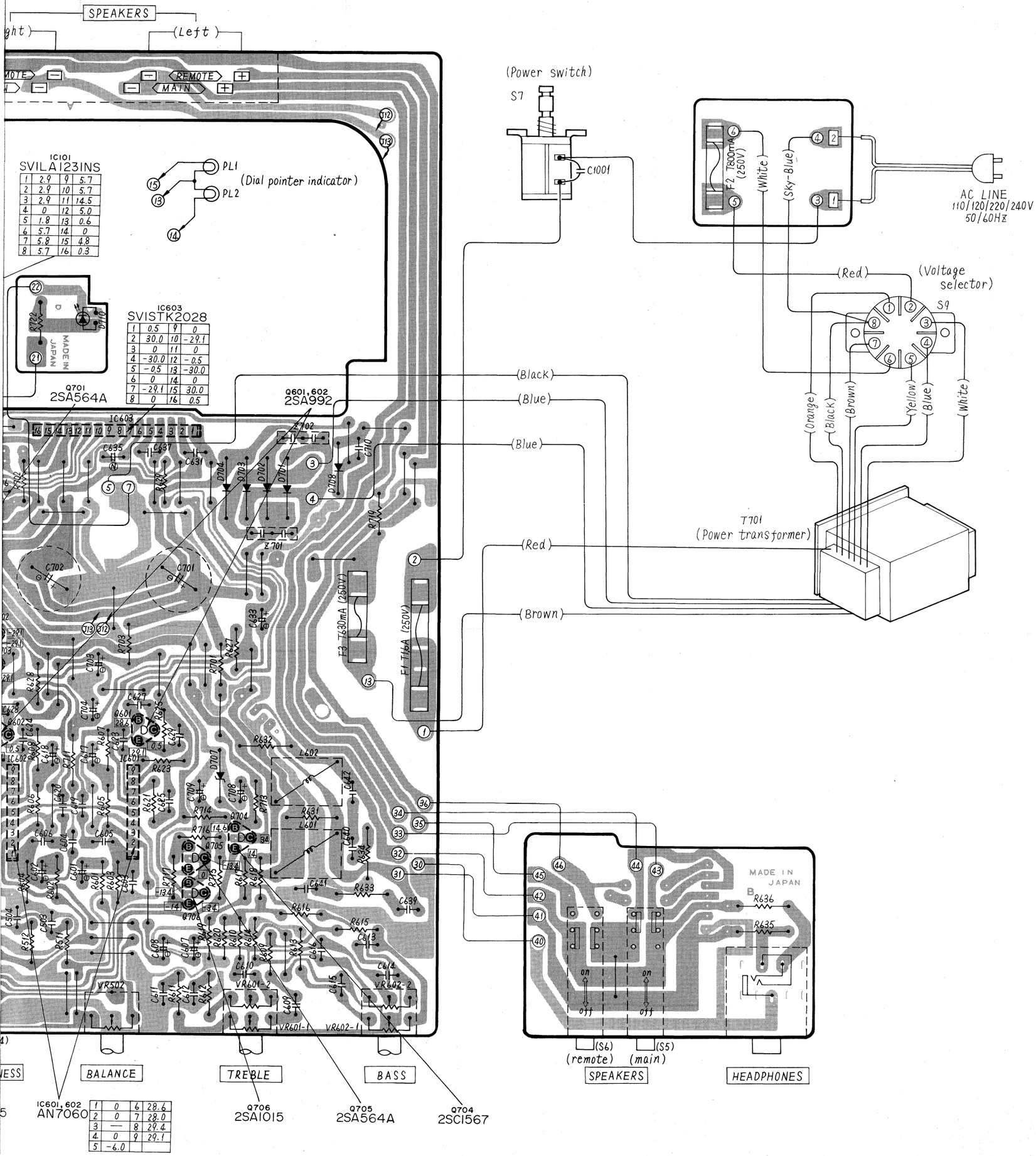
■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines



• Terminal guide of transistors & IC'S

SVILA1231NS, RVIμPC1018CF SVIμPC1161C	AN6876 AN7060F	SVINJM4559DD	SVISTK2028	2SA722, 2SC1674, 2SC1675, 2SA564, 2SA733, 2SC945, 2SC1318, 2SC2320, 2SA992, 2SA1015, 2SC828, 2SA1123, 2SC1815	2SK195	
						



IC101			
1	2.9	9	5.7
2	2.9	10	5.7
3	2.9	11	14.5
4	0	12	5.0
5	1.8	13	0.6
6	5.7	14	0
7	5.8	15	4.8
8	5.7	16	0.3

IC603			
1	0.5	9	0
2	30.0	10	-29.1
3	0	11	0
4	-30.0	12	-0.5
5	-0.5	13	-30.0
6	0	14	0
7	-29.1	15	30.0
8	0	16	0.5

IC601, 602			
1	0	6	28.6
2	0	7	28.0
3	—	8	29.4
4	0	9	29.1
5	-6.0		

2SK195	2SC1567	2SD880	2SK34
Drain	E, C, B	B, C, E	Source, Gate, Drain

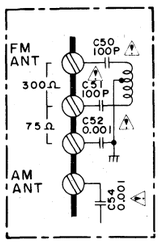
■ SCHEMATIC DIAGRAM ·····MODEL **SA-103**

(This schematic diagram may be modified at any time with the development of new technology.)

1 2 3 4 5 6 7 8 9 10

A B C D E F

- **Antenna circuit for Australia [XL] only**



FM signal
FM ANT
300Ω
75Ω
GND
AM ANT
AM signal
L201
R271 1K
Q1 2SK195 FM RF AMP
Q2 2SC1674 MIXER
Q3 2SC1675 OSC
FM OSC
AM OSC
D101 MA150
IC101 SVILA1231NS FM IF AMP & DET
Muting level
FM MUTING/MODE off/FM mono on/FM auto
S1-1 S1-2 S2-1 S2-2
TP101 TP102 TP103 TP201 TP301
IC201 SVμPC1018C AM/FM IF
D201 0A90
IC301 SVμPC1161C FM MPX
D301
PLL VCO adj.
Q301 Q302 Q303 Q304
Q301 2SA733 MUTING CONTROL
Q302, 303 2SC945 MUTING
Q304 2SA564 SWITCHING
Q401~404 2SC2320L DIFFERENTIAL
S1-3 SELECTOR
S1-4
S3
TAPE MONITOR source → tape
Q201 2SC945 DC AMP
Q202 2SA733 DC AMP
D202 MA150
IC202 AN6876 LED DRIVER
Q203, 204 2SC945 SWITCHING
Q205, 206 2SC1318 SWITCHING
GND (L ch)
PHONO
AUX
REC OUT
TAPE
PLAYBACK
(R ch)
REC/PLAY
D208 SVDPR5532K STEREO INDICATOR
D203~207 SVDAY2434D SIGNAL-STRENGTH INDICATORS
SIGNAL-STRENGTH INDICATORS
(ORANGE) PL2 12V 0.06A PL1 (GREEN)
DIAL INDICATOR

ology.)

8 9 10 11 12 13 14 15 16 17 18

Q401~404
2SC2320L
DIFFERENTIAL

IC401
SVINJM4559DS
EQUALIZER

IC601
AN7060
DIFFERENTIAL AMP.

IC602
AN7060
DIFFERENTIAL AMP.

Q601, 602
2SA992
PRE DRIVE

IC603
SVISTK2028
POWER AMP.

Q301
2SA733
MUTING CONTROL

Q302, 303
2SC945
MUTING

Q304
2SA564
SWITCHING

S1-3 SELECTOR
AM
FM
PHONO
AUX

S1-4
AM
FM
PHONO
AUX

TAPE MONITOR
source ⟷ tape

LOUDNESS
on ⟷ off

Q706
D706
SVDMZ306C

Q705
D705
VDMZL316A

Q707
D707
SVDMZL314C

D709
SVDMZL314C3

D708
SVDSR1K2

Q702
2SA828A
REGULATOR

D701~704
SVDS2V20

Positive voltage line

Negative voltage line

F3
250V T630mA

Q701, 705
2SA564A
REGULATOR

Q703
2SC1815
REGULATOR

Q704
2SC1567
REGULATOR

Q706
2SA1015
REGULATOR

Q707
2SD880
REGULATOR

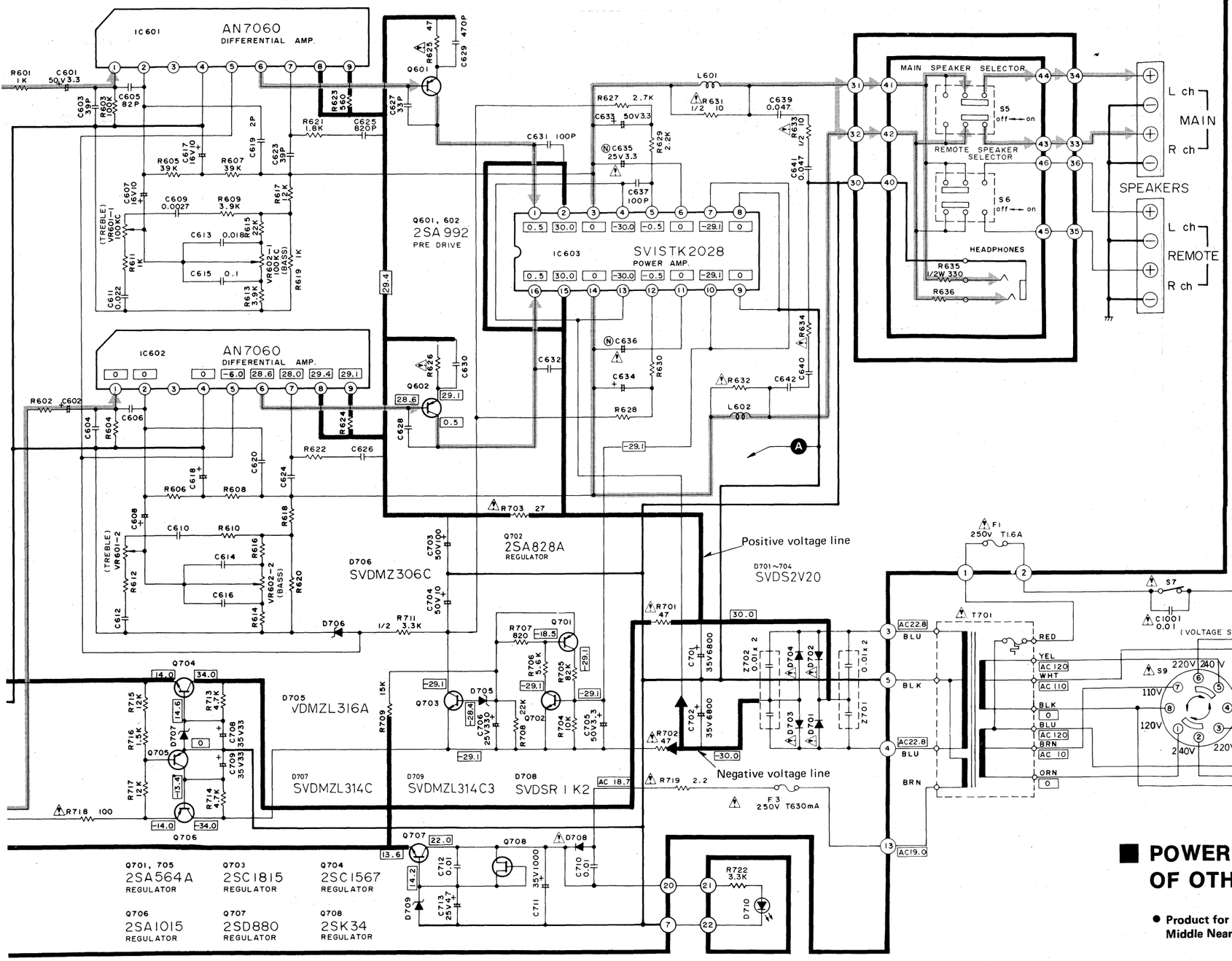
Q708
2SK34
REGULATOR

MAIN SPEAK

REMO

(GREEN)

13 14 15 16 17 18 19 20 21 22

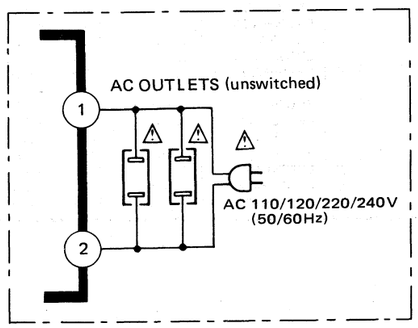


Notes:

1. **S1-1~S1-3** : Selector switch in "**FM**" position.
   AM ⟷ FM ⟷ phono ⟷ aux.
2. **S2-1, S2-2** : FM muting/FM mode switch in **"on/FM auto"** position.
   ■ on/FM auto, ▂ off/FM mono
3. **S3** : Tape monitor switch in "**source**" position.
   ■ source, ▂ tape
4. **S4** : Loudness switch in "**off**" position.
   ■ off, ▂ on
5. **S5** : Main speaker selector switch in "**on**" position.
6. **S6** : Remote speaker selector switch in "**off**" position.
7. **S7** : Power source switch in "**on**" position.
8. **S9** : Voltage selector switch in **"240V"** position.
   120V ⟷ 110V ⟷ 220V ⟷ 240V
9. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
   * Figures in ▭ standard for DC voltage in FM signal reception mode.
   * Figures in ( ) stand for DC voltage in AM signal reception mode.
10. ⇨ FM signal lines, ➡ AM signal lines
    ⇨ AF signal lines, ▬ Positive voltage lines
11. Important safety notice:
    Componetns identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

■ POWER SOURCE CIRCUIT OF OTHER PRODUCTS

- **Product for Southeast Asia, Oceania, Africa, Middle Near East and Central South America. [XA]**



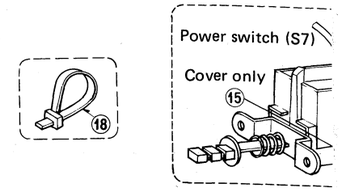
Continued from page 16

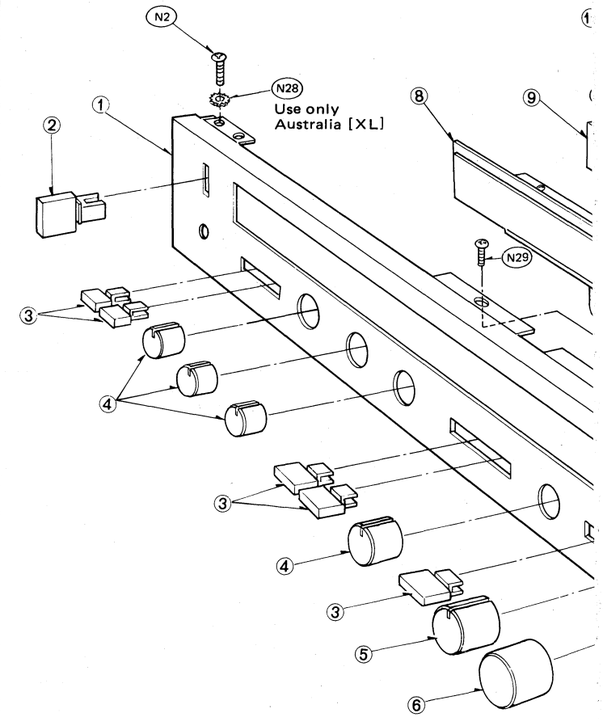
Ref. No.		Part No.	Part Name & Description
R270		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R271		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R297		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ±5%
R298		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ±5%
R299		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R301		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R302		**ERD25FJ100**	Carbon, 1/4W, 10Ω, ±5%
R303		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ±5%
R304, 305		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R306		**ERD25TJ154**	Carbon, 1/4W, 150kΩ, ±5%
R307, 308		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ±5%
R309		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ±5%
R310		**ERD25FJ122**	Carbon, 1/4W, 1.2kΩ, ±5%
R311, 312		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ±5%
R313, 314		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ±5%
R315		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R316		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R317, 318		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R319		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R401, 402		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R403, 404		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R405, 406		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ±5%
R407, 408		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R409, 410		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R411, 412		**ERD25FJ391**	Carbon, 1/4W, 390Ω, ±5%
R413, 414		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R415, 416		**ERD25FJ271**	Carbon, 1/4W, 270Ω, ±5%
R417, 418		**ERD25TJ184**	Carbon, 1/4W, 180kΩ, ±5%
R419, 420		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R421, 422		**ERD25FJ680**	Carbon, 1/4W, 68Ω, ±5%
R423, 424		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R425, 426		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ±5%
R451, 452		**ERD25TJ394**	Carbon, 1/4W, 390kΩ, ±5%
R453, 454		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R455, 456		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R457		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R458		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R501, 502		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ±5%
R503, 504		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R505, 506		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R507, 508		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R511, 512		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ±5%
R601, 602		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R603, 604		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R605, 606		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R607, 608		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R609, 610		**ERD25FJ392**	Carbon, 1/4W, 3.9kΩ, ±5%
R611, 612		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R613, 614		**ERD25FJ392**	Carbon, 1/4W, 3.9kΩ, ±5%
R615, 616		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R617, 618		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R619, 620		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R621, 622		**ERD25FJ182**	Carbon, 1/4W, 1.8kΩ, ±5%
R623, 624		**ERD25FJ561**	Carbon, 1/4W, 560Ω, ±5%
R625, 626	⚠	**ERD25FJ470**	Carbon, 1/4W, 47Ω, ±5%
R627, 628		**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ±5%
R629, 630		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ±5%
R631, 632		**ERD50FJ100**	Carbon, 1/2W, 10Ω, ±5%
R633, 634		**ERD50FJ100**	Carbon, 1/2W, 10Ω, ±5%
R635, 636		**ERG1ANJ331**	Metal Oxide, 1W, 330Ω, ±5%
R701	⚠	**ERD25FJ470**	Carbon, 1/4W, 47Ω, ±5%
R702, 703	⚠	**ERD25FJ270**	Carbon, 1/4W, 27Ω, ±5%
R704		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R705		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ±5%
R706		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ±5%
R707		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ±5%
R708		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R709		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ±5%
R711	⚠	**ERD50FJ332**	Carbon, 1/2W, 3.3kΩ, ±5%
R713, 714		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R715		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R716		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ±5%
R717		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R718	⚠	**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R719	⚠	**ERD25FAJ2R2**	Carbon, 1/4W, 2.2Ω, ±5%
R722		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ±5%

Ref. No.		Part No.	Part Name & Description
CAPACITORS			
C1		ECCD1H150KC	Ceramic, 50V, 15pF, ±10%
C2		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C3		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80 −20%
C4		ECCD1H100KC	Ceramic, 50V, 10pF, ±10%
C5		ECCD1H030C	Ceramic, 50V, 3pF, ±0.25pF
C6		ECCD1H181K	Ceramic, 50V, 180pF, ±10%
C7		ECCD1H060C	Ceramic, 50V, 6pF, ±0.25pF
C8		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C9		ECCD1H100K	Ceramic, 50V, 10pF, ±10%
C10		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80 −20%
C11		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C25		ECKD1H223ZF	Ceramic, 50V, 0.022μF, +80 −20%
C50, 51 [XL] only	⚠	ECKDHS101MB	Ceramic, 400VAC, 100pF, ±20%
C52, 54 [XL] only	⚠	ECKDHS102MD	Ceramic, 400VAC, 0.001μF, ±20%
C101, 102		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C103		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C104, 105		ECQM1H473KC	Polyester, 50V, 0.047μF, ±10%
C106		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C107		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C108		**ECEA50Z1**	Electrolytic, 50V, 1μF
C109		ECCD1H050C	Ceramic, 50V, 5pF, ±0.25pF
C111		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C112, 113		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C114		ECKD1H223ZF	Ceramic, 50V, 0.022μF, +80 −20%
C115		**ECEA1CS330**	Electrolytic, 16V, 33μF
C150		ECCD1H470KC	Ceramic, 50V, 47pF, ±10%
C201		ECCD1H100K	Ceramic, 50V, 10pF, ±10%
C202		ECQP1361JZ	Polypropylene, 100V, 360pF, ±5%
C203, 204		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C205		**ECEA1ES470**	Electrolytic, 25V, 47μF
C206		**ECEA1ES470**	Electrolytic, 25V, 47μF
C207		**ECEA1CS330**	Electrolytic, 16V, 33μF
C208, 209		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C210		ECQM1H333KZ	Polyester, 50V, 0.033μF, ±10%
C211		**ECEA1HS100**	Electrolytic, 50V, 10μF
C212		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C213		**ECEA1CS330**	Electrolytic, 16V, 33μF
C214		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF,
C215		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C217		**ECEA1HS100**	Electrolytic, 50V, 10μF
C218		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C220		**ECEA50Z1**	Electrolytic, 50V, 1μF
C299		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C301		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C302		**ECEA1HS2R2**	Electrolytic, 50V, 2.2μF
C303		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C304		**ECEA1ES101**	Electrolytic, 16V, 100μF
C305, 306		ECKD1H271KB	Ceramic, 50V, 270pF, ±10%
C307		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C308		**ECEA50Z1**	Electrolytic, 50V, 1μF
C309		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF,
C310		ECQP1471JZ	Polypropylene, 100V, 470pF, ±5%
C311, 312		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C313, 314		ECQM1H153JZ	Polyester, 50V, 0.015μF, ±5%
C315		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C401, 402		**ECEA50M3R3R**	Electrolytic, 50V, 3.3μF
C403, 404		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C405, 406		ECCD1H680K	Ceramic, 50V, 68pF, ±10%
C407, 408		ECKD1H103MD	Ceramic, 50V, 0.01μF, ±20%
C409, 410	⚠	**ECEA1CN330S**	Non-polar Electrolytic, 50V, 33μF
C411, 412		ECQM1H223JZ	Polyester, 50V, 0.022μF, ±5%
C413, 414		ECQM1H682JZ	Polyester, 50V, 0.0068μF, ±5%
C415, 416	⚠	**ECEA1HN3R3S**	Non-polar Electrolytic, 50V, 3.3μF
C417, 418		**ECEA1ES101**	Electrolytic, 25V, 100μF
C419		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C501, 502		ECKD1H331KB	Ceramic, 50V, 330pF, ±10%
C503, 504		ECQM1H563KZ	Polyester, 50V, 0.056μF, ±10%
C601, 602		**ECEA50M3R3S**	Electrolytic, 50V, 3.3μF,
C603, 604		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C605, 606		ECCD1H820KC	Ceramic, 50V, 82pF, ±10%
C607, 608		**ECEA1HS100**	Electrolytic, 50V, 10μF
C609, 610		ECQM1H272JZ	Polyester, 50V, 0.0027μF, ±5%
C611, 612		ECQM1H223KZ	Polyester, 50V, 0.022μF, ±10%
C613, 614		ECQM1H183KZ	Polyester, 50V, 0.018μF, ±10%

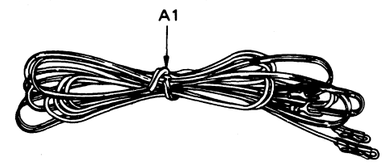
Ref. No.		Part No.	Part Name & Description
C615, 616		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
C617, 618		**ECEA1HS100**	Electrolytic, 50V, 10μF
C619, 620		ECCD1H020C	Ceramic, 50V, 2pF, ±0.25pF
C623, 624		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C625, 626		ECKD1H821KB	Ceramic, 50V, 820pF, ±10%
C627, 628		ECCD1H330KC	Ceramic, 50V, 33pF, ±10%
C629, 630		ECKD1H471KB	Ceramic, 50V, 470pF, ±10%
C631, 632		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C633, 634		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C635, 636	⚠	**ECEA1EN3R3S**	Non-Polar Electrolytic, 25V, 3.3μF
C637		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C639, 640		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C641, 642		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C701, 702		ECETS1VV682U	Electrolytic, 35V, 6800μF
C703		**ECEA1HS101**	Electrolytic, 50V, 100μF
C704		**ECEA1HS100**	Electrolytic, 50V, 10μF
C705		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C706		**ECEA1ES331**	Electrolytic, 25V, 330μF
C708, 709		**ECEA1VS330**	Electrolytic, 35V, 33μF
C710		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C711		**ECEA1VS102**	Electrolytic, 35V, 1000μF
C712		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C713		**ECEA1ES470**	Electrolytic, 25V, 47μF
C1001	⚠	ECKDKC103PF	Ceramic, 400VAC, 0.01μF, +100 −0%

■ EXPLODED VIEW





• Accessories



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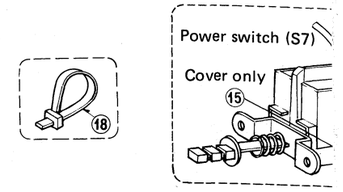
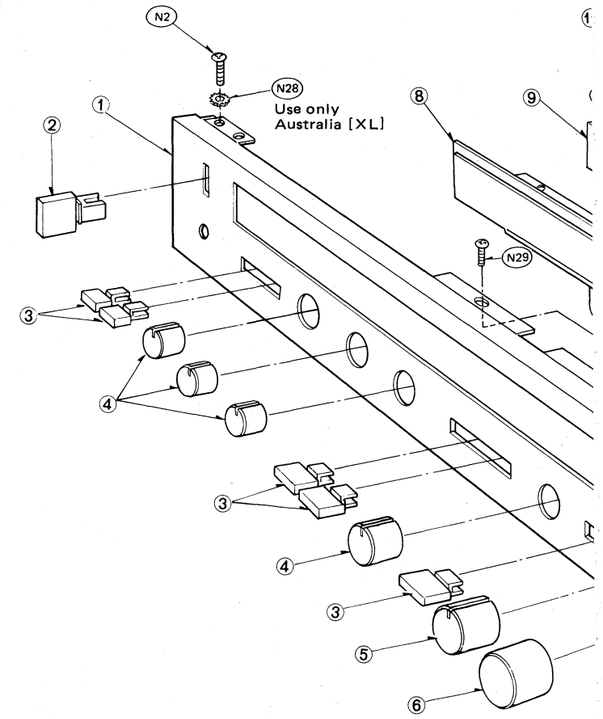
Ref. No.		Part No.	Part Name & Description
R270		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R271		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R297		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ±5%
R298		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ±5%
R299		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R301		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R302		**ERD25FJ100**	Carbon, 1/4W, 10Ω, ±5%
R303		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ±5%
R304, 305		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R306		**ERD25TJ154**	Carbon, 1/4W, 150kΩ, ±5%
R307, 308		**ERD25TJ473**	Carbon, 1/4W, 47kΩ, ±5%
R309		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ±5%
R310		**ERD25FJ122**	Carbon, 1/4W, 1.2kΩ, ±5%
R311, 312		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ±5%
R313, 314		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ±5%
R315		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R316		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R317, 318		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R319		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R401, 402		**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R403, 404		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R405, 406		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ±5%
R407, 408		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R409, 410		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R411, 412		**ERD25FJ391**	Carbon, 1/4W, 390Ω, ±5%
R413, 414		**ERD25FJ822**	Carbon, 1/4W, 8.2kΩ, ±5%
R415, 416		**ERD25FJ271**	Carbon, 1/4W, 270Ω, ±5%
R417, 418		**ERD25TJ184**	Carbon, 1/4W, 180kΩ, ±5%
R419, 420		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R421, 422		**ERD25FJ680**	Carbon, 1/4W, 68Ω, ±5%
R423, 424		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R425, 426		**ERD25FJ221**	Carbon, 1/4W, 220Ω, ±5%
R451, 452		**ERD25TJ394**	Carbon, 1/4W, 390kΩ, ±5%
R453, 454		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R455, 456		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R457		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R458		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R501, 502		**ERD25FJ331**	Carbon, 1/4W, 330Ω, ±5%
R503, 504		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R505, 506		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R507, 508		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R511, 512		**ERD25TJ333**	Carbon, 1/4W, 33kΩ, ±5%
R601, 602		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R603, 604		**ERD25TJ104**	Carbon, 1/4W, 100kΩ, ±5%
R605, 606		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R607, 608		**ERD25TJ393**	Carbon, 1/4W, 39kΩ, ±5%
R609, 610		**ERD25FJ392**	Carbon, 1/4W, 3.9kΩ, ±5%
R611, 612		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R613, 614		**ERD25FJ392**	Carbon, 1/4W, 3.9kΩ, ±5%
R615, 616		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R617, 618		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R619, 620		**ERD25FJ102**	Carbon, 1/4W, 1kΩ, ±5%
R621, 622		**ERD25FJ182**	Carbon, 1/4W, 1.8kΩ, ±5%
R623, 624		**ERD25FJ561**	Carbon, 1/4W, 560Ω, ±5%
R625, 626	⚠	**ERD25FJ470**	Carbon, 1/4W, 47Ω, ±5%
R627, 628		**ERD25FJ272**	Carbon, 1/4W, 2.7kΩ, ±5%
R629, 630		**ERD25FJ222**	Carbon, 1/4W, 2.2kΩ, ±5%
R631, 632		**ERD50FJ100**	Carbon, 1/2W, 10Ω, ±5%
R633, 634		**ERD50FJ100**	Carbon, 1/2W, 10Ω, ±5%
R635, 636		**ERG1ANJ331**	Metal Oxide, 1W, 330Ω, ±5%
R701	⚠	**ERD25FJ470**	Carbon, 1/4W, 47Ω, ±5%
R702, 703	⚠	**ERD25FJ270**	Carbon, 1/4W, 27Ω, ±5%
R704		**ERD25FJ103**	Carbon, 1/4W, 10kΩ, ±5%
R705		**ERD25TJ823**	Carbon, 1/4W, 82kΩ, ±5%
R706		**ERD25FJ562**	Carbon, 1/4W, 5.6kΩ, ±5%
R707		**ERD25FJ821**	Carbon, 1/4W, 820Ω, ±5%
R708		**ERD25TJ223**	Carbon, 1/4W, 22kΩ, ±5%
R709		**ERD25TJ153**	Carbon, 1/4W, 15kΩ, ±5%
R711	⚠	**ERD50FJ332**	Carbon, 1/2W, 3.3kΩ, ±5%
R713, 714		**ERD25FJ472**	Carbon, 1/4W, 4.7kΩ, ±5%
R715		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R716		**ERD25FJ152**	Carbon, 1/4W, 1.5kΩ, ±5%
R717		**ERD25TJ123**	Carbon, 1/4W, 12kΩ, ±5%
R718	⚠	**ERD25FJ101**	Carbon, 1/4W, 100Ω, ±5%
R719	⚠	**ERD25FAJ2R2**	Carbon, 1/4W, 2.2Ω, ±5%
R722		**ERD25FJ332**	Carbon, 1/4W, 3.3kΩ, ±5%

Ref. No.		Part No.	Part Name & Description
CAPACITORS			
C1		ECCD1H150KC	Ceramic, 50V, 15pF, ±10%
C2		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C3		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80 −20%
C4		ECCD1H100KC	Ceramic, 50V, 10pF, ±10%
C5		ECCD1H030C	Ceramic, 50V, 3pF, ±0.25pF
C6		ECCD1H181K	Ceramic, 50V, 180pF, ±10%
C7		ECCD1H060C	Ceramic, 50V, 6pF, ±0.25pF
C8		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C9		ECCD1H100K	Ceramic, 50V, 10pF, ±10%
C10		ECKD1H102ZF	Ceramic, 50V, 0.001μF, +80 −20%
C11		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C25		ECKD1H223ZF	Ceramic, 50V, 0.022μF, +80 −20%
C50, 51 [XL] only	⚠	ECKDHS101MB	Ceramic, 400VAC, 100pF, ±20%
C52, 54 [XL] only	⚠	ECKDHS102MD	Ceramic, 400VAC, 0.001μF, ±20%
C101, 102		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C103		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C104, 105		ECQM1H473KC	Polyester, 50V, 0.047μF, ±10%
C106		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C107		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C108		**ECEA50Z1**	Electrolytic, 50V, 1μF
C109		ECCD1H050C	Ceramic, 50V, 5pF, ±0.25pF
C111		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C112, 113		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C114		ECKD1H223ZF	Ceramic, 50V, 0.022μF, +80 −20%
C115		**ECEA1CS330**	Electrolytic, 16V, 33μF
C150		ECCD1H470KC	Ceramic, 50V, 47pF, ±10%
C201		ECCD1H100K	Ceramic, 50V, 10pF, ±10%
C202		ECQP1361JZ	Polypropylene, 100V, 360pF, ±5%
C203, 204		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C205		**ECEA1ES470**	Electrolytic, 25V, 47μF
C206		**ECEA1ES470**	Electrolytic, 25V, 47μF
C207		**ECEA1CS330**	Electrolytic, 16V, 33μF
C208, 209		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C210		ECQM1H333KZ	Polyester, 50V, 0.033μF, ±10%
C211		**ECEA1HS100**	Electrolytic, 50V, 10μF
C212		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C213		**ECEA1CS330**	Electrolytic, 16V, 33μF
C214		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C215		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C217		**ECEA1HS100**	Electrolytic, 50V, 10μF
C218		ECCD1H220K	Ceramic, 50V, 22pF, ±10%
C220		**ECEA50Z1**	Electrolytic, 50V, 1μF
C299		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C301		**ECEA50Z4R7**	Electrolytic, 50V, 4.7μF
C302		**ECEA1HS2R2**	Electrolytic, 50V, 2.2μF
C303		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C304		**ECEA1ES101**	Electrolytic, 16V, 100μF
C305, 306		ECKD1H271KB	Ceramic, 50V, 270pF, ±10%
C307		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C308		**ECEA50Z1**	Electrolytic, 50V, 1μF
C309		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF,
C310		ECQP1471JZ	Polypropylene, 100V, 470pF, ±5%
C311, 312		**ECEA50ZR47**	Electrolytic, 50V, 0.47μF
C313, 314		ECQM1H153JZ	Polyester, 50V, 0.015μF, ±5%
C315		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C401, 402		**ECEA50M3R3R**	Electrolytic, 50V, 3.3μF
C403, 404		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C405, 406		ECCD1H680K	Ceramic, 50V, 68pF, ±10%
C407, 408		ECKD1H103MD	Ceramic, 50V, 0.01μF, ±20%
C409, 410	⚠	**ECEA1CN330S**	Non-polar Electrolytic, 50V, 33μF
C411, 412		ECQM1H223JZ	Polyester, 50V, 0.022μF, ±5%
C413, 414		ECQM1H682JZ	Polyester, 50V, 0.0068μF, ±5%
C415, 416	⚠	**ECEA1HN3R3S**	Non-polar Electrolytic, 50V, 3.3μF
C417, 418		**ECEA1ES101**	Electrolytic, 25V, 100μF
C419		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C501, 502		ECKD1H331KB	Ceramic, 50V, 330pF, ±10%
C503, 504		ECQM1H563KZ	Polyester, 50V, 0.056μF, ±10%
C601, 602		**ECEA50M3R3S**	Electrolytic, 50V, 3.3μF,
C603, 604		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C605, 606		ECCD1H820KC	Ceramic, 50V, 82pF, ±10%
C607, 608		**ECEA1HS100**	Electrolytic, 50V, 10μF
C609, 610		ECQM1H272JZ	Polyester, 50V, 0.0027μF, ±5%
C611, 612		ECQM1H223KZ	Polyester, 50V, 0.022μF, ±10%
C613, 614		ECQM1H183KZ	Polyester, 50V, 0.018μF, ±10%

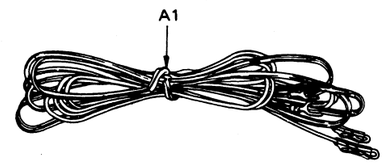
Ref. No.		Part No.	Part Name & Description
C615, 616		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
C617, 618		**ECEA1HS100**	Electrolytic, 50V, 10μF
C619, 620		ECCD1H020C	Ceramic, 50V, 2pF, ±0.25pF
C623, 624		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
C625, 626		ECKD1H821KB	Ceramic, 50V, 820pF, ±10%
C627, 628		ECCD1H330KC	Ceramic, 50V, 33pF, ±10%
C629, 630		ECKD1H471KB	Ceramic, 50V, 470pF, ±10%
C631, 632		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C633, 634		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C635, 636	⚠	**ECEA1EN3R3S**	Non-Polar Electrolytic, 25V, 3.3μF
C637		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
C639, 640		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C641, 642		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
C701, 702		ECETS1VV682U	Electrolytic, 35V, 6800μF
C703		**ECEA1HS101**	Electrolytic, 50V, 100μF
C704		**ECEA1HS100**	Electrolytic, 50V, 10μF
C705		**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
C706		**ECEA1ES331**	Electrolytic, 25V, 330μF
C708, 709		**ECEA1VS330**	Electrolytic, 35V, 33μF
C710		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C711		**ECEA1VS102**	Electrolytic, 35V, 1000μF
C712		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20%
C713		**ECEA1ES470**	Electrolytic, 25V, 47μF
C1001	⚠	ECKDKC103PF	Ceramic, 400VAC, 0.01μF, +100 −0%

■ EXPLODED VIEW





• Accessories

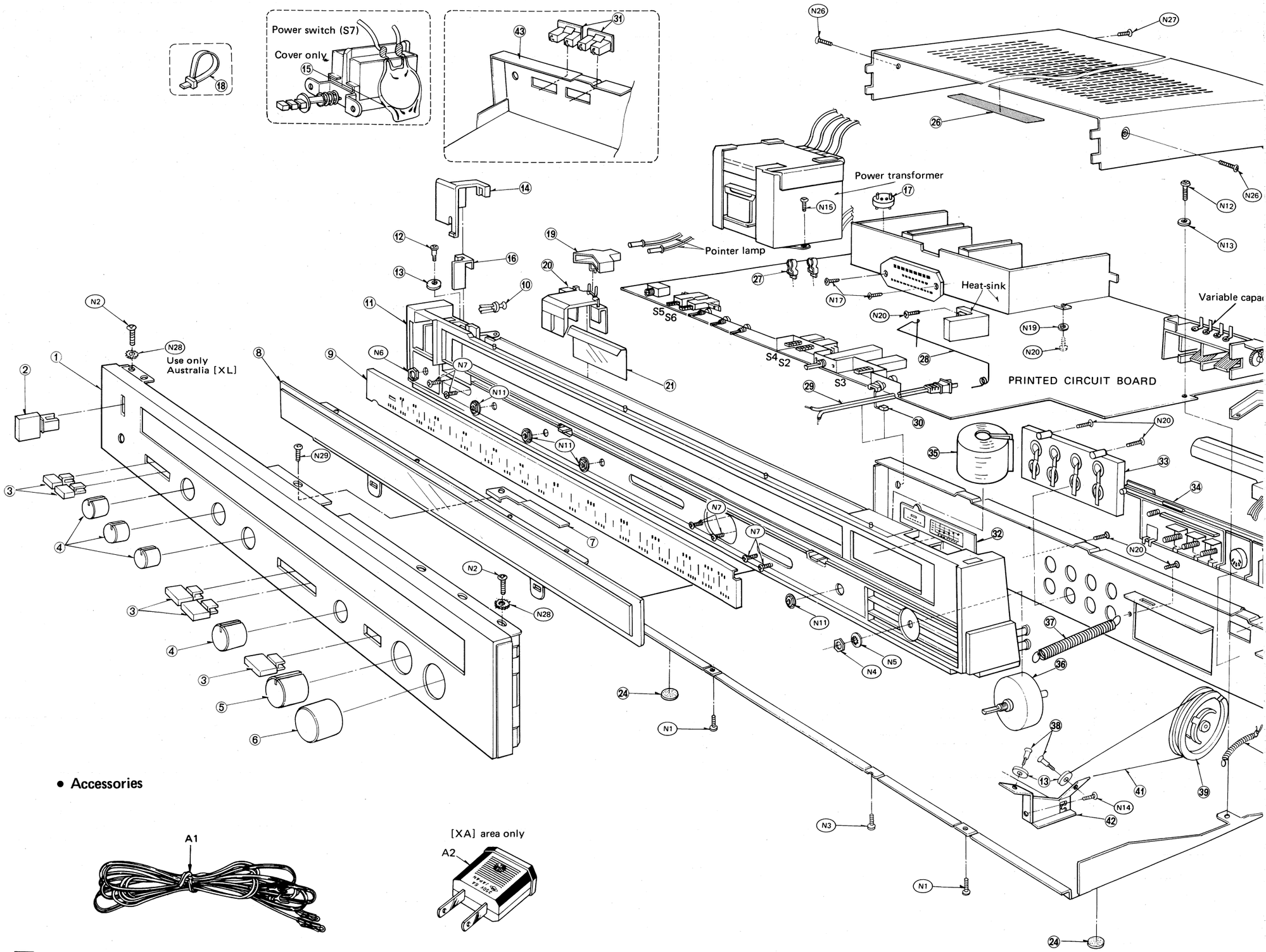


o.		Part No.	Part Name & Description
		ECQM1H104KZ	Polyester, 50V, 0.1μF, ±10%
		ECEA1HS100	Electrolytic, 50V, 10μF
		ECCD1H020C	Ceramic, 50V, 2pF, ±0.25pF
		ECCD1H390KC	Ceramic, 50V, 39pF, ±10%
		ECKD1H821KB	Ceramic, 50V, 820pF, ±10%
		ECCD1H330KC	Ceramic, 50V, 33pF, ±10%
		ECKD1H471KB	Ceramic, 50V, 470pF, ±10%
		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
	⚠	**ECEA50Z3R3**	Electrolytic, 50V, 3.3μF
	⚠	**ECEA1EN3R3S**	Non-Polar Electrolytic, 25V, 3.3μF
		ECCD1H101K	Ceramic, 50V, 100pF, ±10%
		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
		ECQM1H473KZ	Polyester, 50V, 0.047μF, ±10%
		ECETS1VV682U	Electrolytic, 35V, 6800μF
		ECEA1HS101	Electrolytic, 50V, 100μF
		ECEA1HS100	Electrolytic, 50V, 10μF
		ECEA50Z3R3	Electrolytic, 50V, 3.3μF
		ECEA1ES331	Electrolytic, 25V, 330μF
		ECEA1VS330	Electrolytic, 35V, 33μF
		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20 %
		ECEA1VS102	Electrolytic, 35V, 1000μF
		ECKD1H103ZF	Ceramic, 50V, 0.01μF, +80 −20 %
		ECEA1ES470	Electrolytic, 25V, 47μF
	⚠	ECKDKC103PF	Ceramic, 400VAC, 0.01μF, ±10 %

■ EXPLODED VIEW

(Rear Panel and AC Outlet) . . . for [XA]

Available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.



- **Accessories**

[XA] area only

... for [XA]
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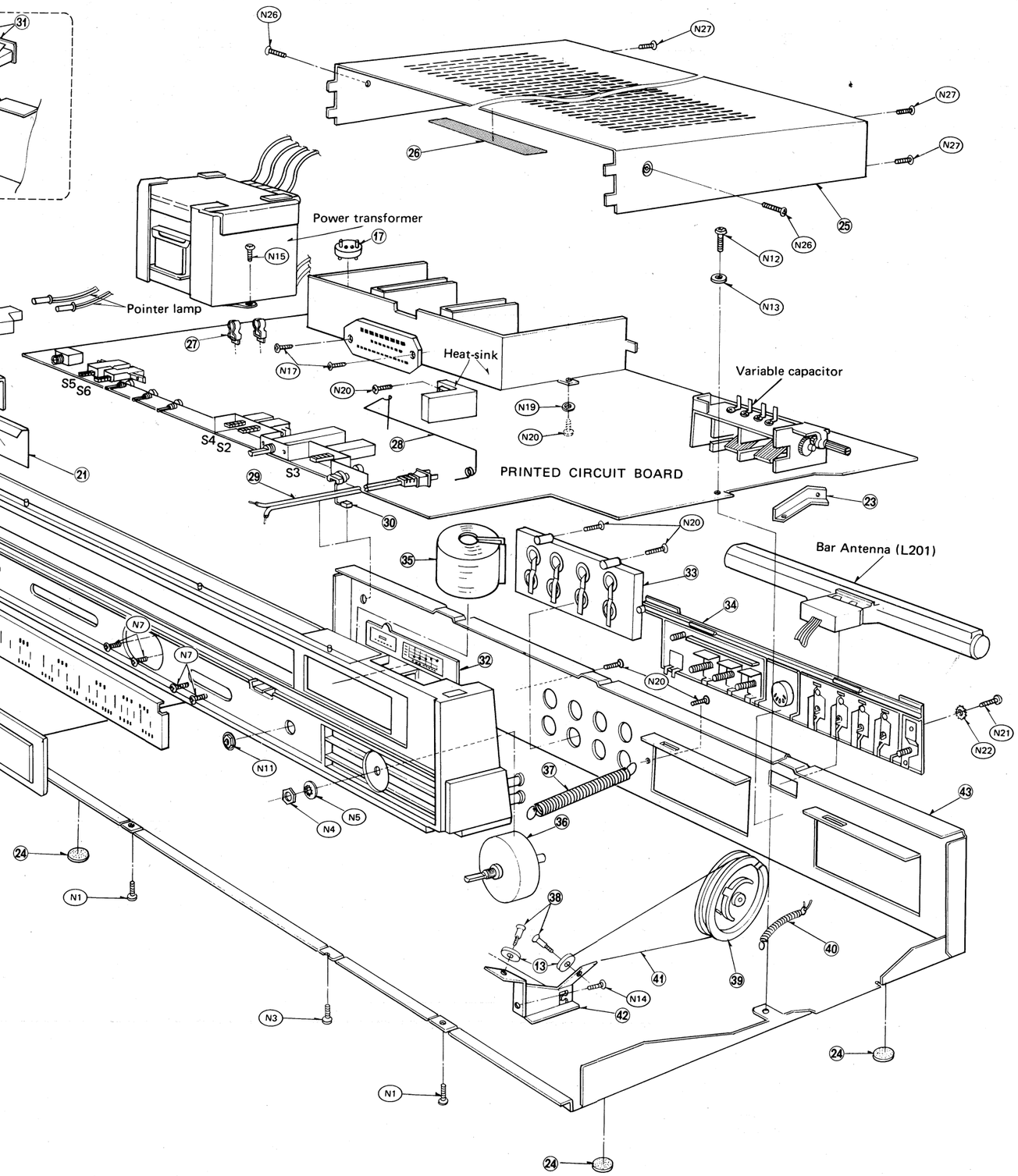

■ REPLACEMENT PARTS LIST (Cabinet and Chassis Parts)

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
3. ⓚ -marked parts are used for black only, while ○ marked parts are for silver type only.
4. Parts other than ⓚ - and ○-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. : SA-103 (K)

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	○	SYW405–1	Panel, Front (Silver Type)
1	ⓚ	SYW405–5	Panel, Front (Black Type)
2		SBC301–5	Knob, Power
3		SBC369–2	Knob, Speaker Selector, Loudness Muting, Tape
4		SBN1019	Knob, Bass, Treble, Balance & Selector
5		SBN1049	Knob, Volume
6		SBN1051	Knob, Tuning
7		SUW1829	Bracket, Transparent Panel
8		SGU215–1	Panel, Transparent
9	○	SKD4110–3	Scale, Dial (Silver Type)
9	ⓚ	SKD4110–1	Scale, Dial (Black Type)
10		SHR401–1	Latch, LED P.C.B
11	○	SUF305	Panel, Front Plate (Silver Type)
11	ⓚ	SUF305–2	Panel, Front Plate (Black Type)
12		SHD3X27	Shaft, Dial Pulley
13		**RDR8–1**	Pulley, Dial
14		SHR9557	Holder, Dial Scale
15		SMXA65	Cover, Line Capacitor
16		SHG1589	Rubber, Dial Holder
17		SHE113	Clamper, P.C.B.
18		SHR301	Clamper, Pointer
19		SHG1587	Rubber, Pointer
20		SDP5083	Pointer, Dial
21		SHP53–3	Slider, Pointer
22		XCJ6P21B–A1	Jack, Headphones
23		SUW1813	Bracket, Tuning Gang
24		SKL245	Foot, Set
25	○	SKC750S1	Cabinet (Silver Type)
25	ⓚ	SKC750B1	Cabinet (Black Type)
26		SHS1009	Fiber, Cabinet
27		SJT347	Clip, Fuse
28		SUS233	Spring
29 [XA] Only	⚠	SJA111	AC Cord, Power Source
29 [XL] Only	⚠	**QFC1207M**	AC Cord, Power Source
29 [Other Areas]	⚠	**SJA88**	AC Cord, Power Source
30 [XL] Only		SHR131	Bushing, AC Cord
30 [Other Areas]		SHR127	Bushing, AC Cord
31 [XA] only	⚠	SJS9221	Socket, AC Outlet
32	○	SGX7045–1	Plate, Light Emitting Diode (Silver Type)
32	ⓚ	SGX7045–2	Plate, Light Emitting Diode (Black Type)
33		SJF4813–1	Terminal, Speaker
34 [XL] Only		SJF8033–3N	Terminal, Input & Antenna
34 [Other Areas]		SJF8033–1N	Terminal, Input & Antenna
35		SUV453	Cover, Voltage Adjuster
36		SDT8081	Shaft, Tuning
37		SUS175	Spring, Dial Pointer
38		SHD3X1F–1	Shaft, Dial Pulley
39		SDD47–1	Drum, Variable Capacitor
40		SDSA4121	Spring, Drum
41		SDZ051–2	Cord, Dial (1.8m)
42		SUW1769	Bracket, Dial

Ref. No.		Part No.	Part Name & Description
43 [XL] only	JPN	SGP2671–3B	Panel, Rear (Made in Japan)
43 [XA] only	JPN	SGP2671–2B	Panel, Rear (Made in Japan)
43 [EH, K-EH] only	MSA	SGP2671–1E	Panel, Rear (Made in Singapore)
43 [EX, K-EX]	JPN	SGP2671–1B	Panel Rear (Made in Japan)
43 [EX, K-EX]	MSA	SGP2671–1C	Panel Rear (Made in Singapore)
SCREWS, NUTS and WASHERS			
N1		**XTB3+8BFZ**	Screw, Front Panel (Under)
N2		**XTB3+10BFZ**	Screw, Front Panel (Top)
N3		**XTB3+8BFZ**	Screw, Front Plate (Front Chassis)
N4		**XNS11**	Nut, Tuning Shaft M'tg
N5		**XWD11B**	Washer, Tuning Shaft M'tg
N6		**XNS12**	Nut, Headphone Jack M'tg
N7		**XSN3+8S**	Screw, Powers Switch etc. M'tg
N8		**XWA3B**	Washer, Powers Switch etc. M'tg
N9		**XSN3+8S**	Screw, Speaker Selector Switch
N10		**XWA3B**	Washer, Speaker Selector Switch
N11		SNE4021	Nut, Selector Switch
N12		**XSN3+8S**	Screw, P.C.B.
N13		**XWG3**	Washer, P.C.B.
N14		**XTB3+8BFN**	Screw, Dial Pulley Bracket
N15		**XTB4+8BFN**	Screw, Power Transformer
N16		**XNG6E**	Nut, Power Transformer
N17		**XTB3+14BFN**	Screw, Power IC M'tg
N18		**XTN3+8B**	Screw, Heat Sink M'tg
N19		**XWG3**	Washer, Heat Sink M'tg
N20		**XTB3+8BFZ**	Screw, Speaker Terminals & Heat Sink M'tg
N21		**XTB3+8BFN**	Screw, Input Terminals & Variable Capacitor
N22		**XWC3C**	Washer, Input Terminals & Variable Capacitor
N23		**XSN3+8S**	Screw, Variable Capacitor
N24		**XWA3B**	Washer, Variable Capacitor
N25		**XWG3**	Washer, Variable Capacitor
N26	○	**XTB4+8BFN**	Screw, Side Cabinet (Silver Type)
N26	ⓚ	**XTB4+8BFZ**	Screw, Side Cabinet (Black Type)
N27	○	**XTB3+8BFN**	Screw, Rear Cabinet (Silver Type)
N27	ⓚ	**XTB3+8BFZ**	Screw, Rear Cabinet (Black Type)
N28 [XL] only		**XWC3B**	Washer, Front Panel (Top)
N29		**XSS3+4S**	Screw, Bracket
ACCESSORIES			
A1		SSA267	Cord, FM Indoor Antenna
A2 [XA] Only	⚠	SJP5213–1	Plug Adaptor, Power Source
PACKING PARTS			
P1		SPP649	Polyethylene Bag
P2 [XL] Only		SPS3069–1	Pad, Left Side
P2 [Other Areas]		SPS3069–2	Pad, Left Side
P3 [XL] Only		SPS3071–1	Pad, Right Side
P3 [Other Areas]		SPS3071–2	Pad, Right Side
P4 [XL] only	JPN	SPG3245	Carton Box (Made in Japan)
P4 [EX, K-EX, [EH, K-EH]	MSA	SPG3293	Carton Box (Made in Singapore)
P4 [Other Areas]	JPN	SPG3243	Carton Box (Made in Japan)
P5 [XA] only		SQF10907	Instruction Book, Printed Matter
P5 [Other Areas]		SQF10903	Instruction Book, Printed Matter

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

JPN: Made in Japan
MSA: Made in Singapore

Printed in Japan
81063000 ⓚSH/TS